Imperial Solar Energy Center West

Appendix I-1

Biological Technical Report

Prepared by Recon Environmental, Inc.

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Biological Technical Report for the Imperial Solar Energy Center West Project

Prepared for

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Executive Summary

CSOLAR Development, LLC is proposing to build a 250 megawatt photovoltaic solar field and associated transmission line west of El Centro, California. The proposed Imperial Solar Energy Center (ISEC) West Project is located approximately 8 miles west of El Centro in Imperial County, California (Attachment 1: Figure 1). The proposed project includes a 1,071.5-acre solar field (R-1) that abuts Interstate 8 to the north and south, and a proposed 230-kilovolt (kV) transmission line route (Preferred Alternative; IVW-2 and IVW-2B) running from the southeast corner of the solar field to the Imperial Valley Substation (Attachment 1: Figures 2 and 3). Alternate routes for the 230-kV transmission line include Alternative A (IVW-2 and IVW-2A) that shares a portion of the Preferred route, but bypasses a parcel of privately owned land; and Alternative B (IVW-1) running from the southwest corner of the solar field to the Imperial Valley Substation adjacent to an existing 230-kV transmission line. The transmission corridor would consist of a 120-foot-wide right-of-way along Bureau of Land Management land, although most of the land within the right-of-way would not be subject to disturbance. A third alternative, Alternative C, includes a reduced solar field of 1,061.2 acres that connects to the Imperial Valley Substation via IVW-2 and IVW-2A (Attachment 1 Figures 2 and 3).

General biological surveys, rare plant surveys, and a preliminary jurisdictional delineation were conducted during the spring of 2010 within the proposed solar field and transmission routes. In addition, focused burrowing owl and southwestern willow flycatcher surveys are currently being conducted. The 1,713.4-acre survey area is located in a Colorado Desert lowland between agricultural fields to the east and Mount Signal to the west.

Seven vegetation communities were mapped within the survey area including creosote bush–white burr sage scrub, desert wash, mesquite thicket, tamarisk thicket, open water, abandoned agricultural fields, and active agricultural fields. Vegetation communities associated with wetland or riparian habitats such as the desert wash and mesquite thickets are considered sensitive by California Department of Fish and Game. In addition, the creosote bush–white burr sage scrub and abandoned agricultural fields are occupied by the federally proposed threatened flat-tailed horned lizard (*Phrynosoma mcallii*). Potentially significant impact will occur to desert wash, mesquite thicket, creosote bush–white burr sage scrub, and the abandoned agricultural fields; and habitat restoration and compensation, as well as a weed management plan, will be required to mitigate this impact.

Four priority plant species were observed within the survey area and vicinity during spring rare plant surveys, including brown turbans (*Malperia tenuis*), Salton milkvetch (*Astragalus crotolariae*), Thurber's pilostyles (*Pilostyles thurberi*), and Parish's desert-thorn (*Lycium parishii*). Impact is expected to occur to all 49 Thurber's pilostyles plants

and associated Emory's indigo bush shrubs within the ISEC West solar field. This impact would be potentially significant and mitigation would be required in the form of relocation, when appropriate, or included as part of the restoration palette for impact. Restoration standards, including potential transplantation and other conservation measures should be developed in coordination with the Bureau of Land Management and other state and/or federal agencies as appropriate. No other priority plant species are expected to be impacted.

The federally proposed threatened flat-tailed horned lizard, the Bureau of Land Management sensitive burrowing owl (*Athene cunicularia*), and the California Species of Special Concern loggerhead shrike (*Lanius ludovicianus*), crissal thrasher (*Toxostoma crissale*), and LeConte's thrasher (*T. lecontei lecontei*) were observed within the survey area. Species-specific avoidance, minimization, and mitigation measures such as pre-construction surveys, timing of construction, biological monitoring during construction, compensation for habitat loss, and wildlife mortality reporting will be required to reduce potentially significant impact to a level of less than significant for these species.

A preliminary delineation of jurisdictional waters of the U.S. and State was conducted to identify drainages and washes within the jurisdiction of U.S. Army Corps of Engineers, California Department of Fish and Game, and California Regional Water Quality Control Board. Impact to jurisdictional waters of the U.S. under U.S. Army Corps of Engineers jurisdiction on-site would require a permit under Section 404 Clean Water Act, and as part of the 404 permit process, a Section 401 state water quality certification from the California Regional Water Quality Control Board. Depending on the extent of the impact, a Section 404 Nationwide Permit may be appropriate. In addition, a Section 1602 Streambed Alteration Agreement would also need to be authorized for any alteration to the bed or bank of any waters of the State. Compliance with the State Water Resources Control Board's General Construction Permit is also required.

1.0 Introduction

CSOLAR is proposing to build a photovoltaic (PV) solar field and associated transmission lines west of El Centro, California. This report identifies biological resources within the proposed project area and adjacent land ("survey area"), evaluates potential project impact associated with project construction and operation, and recommends mitigation measures for the Imperial Solar Energy Center (ISEC) West Project.

1.1 Location

The proposed ISEC West Project is located approximately 8 miles west of El Centro in Imperial County, California (Attachment 1: Figure 1). The proposed project includes a 1,071.5-acre solar field (R-1) that abuts Interstate 8 to the north and south, and a proposed 230-kilovolt (kV) transmission line route (Preferred Alternative; IVW-2 and IVW-2B) running from the southeast corner of the solar field to the Imperial Valley Substation (Attachment 1: Figures 2 and 3). Alternate routes for the 230-kV transmission line include Alternative A (IVW-2 and IVW-2A) that shares a portion of the Preferred route, but bypasses a parcel of privately owned land; and Alternative B (IVW-1) running from the southwest corner of the solar field to the Imperial Valley Substation adjacent to an existing 230-kV transmission line. A third alternative, Alternative C, includes a reduced solar field of 1,061.2 acres that connects to the Imperial Valley Substation via IVW-2 and IVW-2A (Attachment 1 Figures 2 and 3).

The project area is found in: Township 16 South, Range 11 East, Sections 19, 24, 25, 30, and 31; Township 16 South, Range 12 East, Sections 18, 19, 30, 31, 32, 33, and 34; Township 16.5 South, Range 12 E, Sections 3 and 4; of the U.S. Geological Survey (USGS) Plaster City, Mount Signal, and Yuha Basin quadrangles (USGS 1979, USGS 1976a, USGS 1976b; Attachment 1: Figures 2 and 3). The proposed project is found within abandoned agricultural fields and undisturbed desert immediately west of the active agricultural complex that surrounds El Centro, California.

1.2 Project Description

1.2.1 Solar Facility Project Components

PV Solar Power Generating System

CSOLAR Development, LLC proposes to construct a PV solar facility. The project consists of ground mounted PV solar power generating system capable of producing approximately 250 megawatts of electricity. Approximately 1,071.5 acres of the 1,128-acre ISEC West solar field survey area are expected to be impacted by the proposed

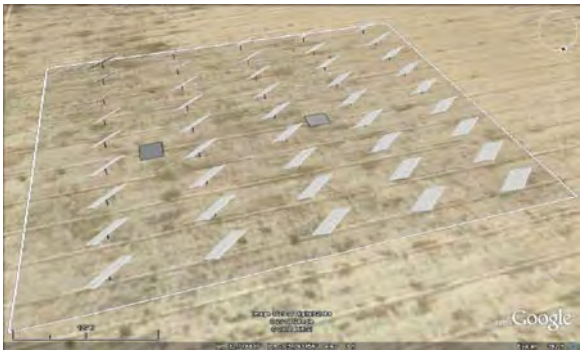
project (Preferred Alternative). Construction impact associated with the solar field consists of use of heavy equipment, on-site cement mixing, and deliveries of equipment. Minimal cut and fill grading would be required.

CSOLAR is also proposing a reduced solar field alternative, Alternative C. This reduced solar field alternative will impact 1061.2 acres of the 1,128-acre ISEC West solar field survey area, a reduction of upland mustard vegetation within the abandoned agricultural fields at three locations totaling 10.3 acres.

The major generation equipment that makes up the PV electrical generation system includes solar modules, a panel racking and foundation design inverter and transformer station, an electrical collection system, and a switchyard. The facility would also have auxiliary equipment which would include safety and security equipment and operations and maintenance (O&M) facilities. Two types of solar module technology are being considered for use on the project site. These technologies are concentrating photovoltaic (CPV) solar modules and PV solar modules. Each of these is described in more detail below.

CPV Solar Modules

CPV solar modules use Fresnel lenses to concentrate sunlight 500 times and focus it onto small, highly efficient III-V triple-junction solar cells that convert light to electrical energy. The CPV modules are non-reflective and convert sunlight directly into electricity. No fossil fuels are consumed, and no greenhouse gas emissions occur during operation.



Each CPV module measures 2 feet wide, 4 feet long, 4 inches deep, and weighs 22 pounds. Inside each module are 135 cells connected in a series providing a nominal power output of 153 watts (W) per module or 1.83 kW per supermodule. Twelve (12) CPV modules collectively comprise a supermodule that is 8 feet wide and 16 feet long. Twelve supermodules are mounted atop a two-axis elevation over an azimuth tracker, which follows the sun's daily trajectory across the sky to provide the highest possible level of energy production, particularly so during high-energy-demand afternoon hours. Collectively, all of the trackers are wired to a centralized inverter for reliable feed-in to the power grid.

PV Modules

Photovoltaic modules (or panels), which are non-reflective and convert sunlight directly into electricity, will be combined in arrays and mounted to racks supported by driven piles, drilled and grouted piles, ballasted piles, or similar mechanism. The output of multiple rows of PV modules is collected and delivered through combiner boxes and associated electrical wiring along an underground trench (approximately 3 feet deep and up to 5 feet wide [width includes trench and disturbed area]) to the inverter at the inverter and transformer station.

The project inverters and transformers, as well as other electrical equipment, are located within protective electrical equipment supported by concrete pads or compacted gravel. The dimensions of the inverters are approximately 3.5 feet in width by 12 feet in length by 8 feet in height.

The transformers are 8 feet in width, 8 feet in length, and 6 feet in height. Transformers contain dielectric fluid (mineral oil) and will be located on a concrete pad approximately 30 feet long by 15 feet wide, surrounded by an earthen or concrete containment berm/curb approximately 55 feet long by 35 feet wide. The containment area will be lined with an impermeable membrane covered with gravel to drain into an underground storage tank. The above containment/storage tank/holding pond system will be designed to accommodate the volume of the dielectric fluid in the transformer plus an allowance for precipitation.

Multiple transformers are connected together delivering alternating current (AC) power along a cable in an underground trench (approximately 4 feet deep and up to 5 feet wide [width includes trench and disturbed area]) to electrical risers located throughout the site. From the risers, the power is delivered to the internal overhead collection lines to the on-site project switchyard. The on-site overhead lines are mounted on wooden poles approximately 60 feet tall and spaced approximately 160 feet apart. Alternatively, the project may be constructed with an underground collection system.

Grounding of the project substation will be accomplished by a ground grid designed to meet the requirements of Institute of Electrical and Electronics Engineers (IEEE 2000). Final ground grid design will be based on site-specific information such as available fault current and local soil resistivity. Typical ground grids consist of direct buried copper

conductors with 8-foot-long copper-clad ground rods arranged in a grid pattern to approximately 3 feet outside of the substation area.

1.2.1.2 Solar Field Auxiliary Facilities

The solar field and support facilities perimeter will be secured with security fencing. Controlled access gates will allow access to staff and the Bureau of Land Management (BLM), County Fire, and Border Patrol.

Project lighting will be primarily in the area of the O&M building. Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives and will be downward facing and shielded to focus illumination on the desired areas only.

Paving road facilities on-site is not proposed in order to allow water to continue to percolate into the soil. The roads will be constructed to all weather access standards. A network of roads between solar blocks will provide O&M access to solar equipment (e.g., solar panels, inverters, transformers). These roads will be 20 feet in width to allow for emergency access.

The project will include a single O&M building located adjacent to the solar field. The building will be approximately 10,000 square feet with a maximum height of 25 feet. A gravel parking lot will be constructed.

Once the project PV facilities are fully operational, water will be required for domestic use, solar panel washing, and fire protection. The facility will use approximately 5 acre-feet of water per year for O&M. Water for panel washing and fire protection will be drawn from the Westside Main Canal and treated to the level required for domestic and panel washing use. Additional water may be required the first 2–3 years of operation for habitat enhancement of the vegetation underneath the solar panels in order to establish native plants. Once native plants are established, natural precipitation regimes should provide sufficient water to maintain the plants, and additional watering will no longer be necessary. Water tanks of 5,000–10,000 gallons will be installed for storage of treated water.

The project will also include one or more on-site Solar Meteorological Stations (SMS) which will be mounted on tripods, 6 and 10 feet in height and located inside the solar array field.

1.2.1.3 O&M

The project will primarily operate during daylight hours and will require approximately four full-time personnel for O&M. The project site will be staffed with a security guard 24 hours per day, 7 days per week. Regular security patrols will be conducted throughout the site.

Water would be sprayed on the PV panels using a wash truck with a water tank to remove dust to maintain efficient conversion of sunlight to electrical power. The cleaning interval would be determined by the rate at which electrical output degrades between cleanings. It is estimated that panel cleaning will be required about twice per year and approximately 1 gallon would be required for washing each PV module. Total operational water needs would total approximately 5 acre-feet of water per year—primarily for panel washing.

The ongoing maintenance requirements for the solar farm, once it is constructed, are minimal. O&M activities include:

- Replacing any defective solar panels
- System testing
- Maintaining the inverters and transformers (a few times per year)
- Equipment inspections
- Maintaining the switchyard
- Noxious weed abatement and/or habitat restoration
- Security

No heavy equipment will be used during normal project operation. O&M vehicles will include utility vehicles, trucks, forklifts, and loaders for routine and unscheduled maintenance. Large heavy haul transport equipment may be brought to the site infrequently for equipment repair or replacement.

1.2.1.4 Termination and Restoration

The generating facility's total useful operating life with appropriate maintenance, repair and component replacement procedures is expected to be 30 years.

The applicant has obtained leases from the current owners of the project site. These leases require the applicant to restore the land to its current agricultural use at the end of the project term.

1.2.2 Transmission Lines

CSOLAR is proposing a 230-kV overhead transmission line (Preferred Transmission Line; IVW-2 and IVW-2B) that will connect CSOLAR's PV solar field on private land with the Imperial Valley Substation. The proposed transmission line will be located almost entirely on BLM land. It will run from the north side of the Imperial Valley Substation

(Substation) to connect to the southeast corner of the proposed solar field adjacent to another transmission line proposed by Imperial Irrigation District (Attachment 1: Figure 2 and 3). This alternative bypasses a parcel of private land that is within IVW-2A. The BLM right-of-way (ROW) required for this transmission project would be 120 feet wide. However, as shown below, the project disturbance footprint would be substantially smaller. The transmission support structures would consist of steel lattice towers and/or steel monopoles which would be erected on the center line of the 120-foot-wide ROW. The towers would be spaced approximately 900 to 1,150 feet apart (600 to 800 feet apart for monopoles) and would be roughly in line with the existing line's towers in an east–west direction. Within 1,000 feet of the Substation, the towers would switch to galvanized steel monopoles. It is planned for each support structure to be capable of carrying two electrical circuits. One circuit would be added as part of this project, and the second circuit could be added at a later date. The electrical circuit consists of three phases with one unbundled conductor making up each phase. The towers would be anchored to concrete foundations at each of the four corners at the base of the tower. The tower base dimensions would range from approximately 30 feet by 30 feet for suspension towers to 40 feet by 40 feet for the deflection and dead-end towers.

Areas of permanent disturbance would be those areas where the surface of the ground would be permanently disturbed. Specifically, permanent impact would occur where new access roads and footings or anchors for tower, monopole, or crossing structures are constructed. Temporary disturbance would occur in areas where construction activity takes place, but where restoration of the surface is possible.

CSOLAR is also proposing two alternative transmission lines. The Alternative A transmission line includes IVW-2 and IVW-2A. Transmission Alternative B would run parallel to the Southwest Power Link and then connect to the north side of the Substation. The ROW requirements and transmission construction would be similar to the Preferred Alternative, as described above.

Preferred Alternative

IVW-2B transmission route would result in 6.8 acres of permanent disturbance and 6.9 acres of temporary disturbance:

- Permanent Access Roads (12 feet wide)
- 34 Permanent Monopole Footings (8-foot diameter)
- 34 Temporary Monopole Work Areas (100 feet x 100 feet)
- 1 Temporary Pull Site (100 feet x 60 feet)

Alternative A

IVW-2A transmission route would result in 6.8 acres of permanent disturbance and 6.8 acres of temporary disturbance:

- Permanent Access Roads (12 feet wide)
- 32 Permanent Monopole Footings (8-foot diameter)
- 32 Temporary Monopole Work Areas (100 feet x 100 feet)
- 3 Temporary Pull Sites (100 feet x 60 feet)

Alternative B

IVW-1 Proposed transmission route would result in 8.4 acres of permanent disturbance and 4.5 acres of temporary disturbance from the following project components:

- Permanent Access Roads (12 feet wide)
- One Permanent Monopole Footing (8-foot diameter)
- 27 Permanent Lattice Tower sites (four footings that are 6 feet in diameter)
- One Temporary Monopole Work Area (100 feet x 100 feet)
- 27 Temporary Lattice Tower Work Areas (60 feet X 80 feet or 140 feet x 140 feet)
- 2 Temporary Pull Sites (100 feet x 60 feet)

Construction would begin with site preparation, consisting of grading of access roads, where necessary, and drilling or excavation for support structures and footings. Support structures would be fabricated in segments by the same vendor. In order to minimize the amount of lay-down area required, lattice towers and A-frame structures may be carried to the construction site by helicopter depending on conditions at tower locations. All lay-down areas would be on private land. Monopoles would be brought to the site by truck in sections, assembled in lay-down areas, and lifted into place with a crane. Principal preparation at each support structure location would consist of preparing concrete foundation footings. Each tower would require four footings, one on each corner. A single footing would be needed for each monopole.

The following transmission line support structures would be utilized throughout the ROW corridors: suspension, deflection and dead-end towers, which are about 140 feet high, and deflection and suspension monopoles are about 100 feet high. Once support structures are in place, conductors would be strung for the entire length of the transmission lines using truck-mounted cable-pulling equipment.

At the crossing structure south of the Southwest Power Link, the static wires would be brought down the structure, placed in a trench to pass to the other side of the Southwest Power Link and brought back up the crossing structure on the other side. The trench would be backfilled.

Construction would be completed by restoring disturbed ground surfaces to original contours. Spoil dirt excavated for the footings would be spread on the ground, on access roads, or taken off-site for disposal in a permitted disposal site.

1.2.2.1 O&M

O&M requirements for transmission lines are limited. O&M activities would include, but not necessarily be limited to, the following:

(1) Yearly maintenance grading of access roads

(2) Insulator washing

(3) Monthly on-ground inspection of towers, poles, and access roads by vehicle

(4) Air or ground inspection as needed

(5) Repair of tower or pole components as needed

(6) Repair or replacement of lines as needed

(7) Replacement of insulators as needed

(8) Painting pole or tower identification markings or corroded areas

(9) Response to emergency situations (e.g., outages) as needed to restore power.

For most of these operations, equipment could use the access roads, which are subject to ongoing disturbance. Transmission line conductors may occasionally need to be upgraded or replaced over the life of the line.

1.2.2.2 Termination and Restoration

Restoration will be completed upon termination of construction in temporary use areas. Permanent restoration will be completed upon expiration of the ROW term. The disturbed surfaces will be restored to the original contour of the land surface to the extent determined by the BLM. Salvaged native plants will be used for re-vegetation, if appropriate, along with seeding using BLM-approved seed mixes.

1.3 Regulatory Environment

The following state and federal environmental regulations apply to the proposed project:

Endangered Species Act of 1973. Endangered Species Act of 1973 (16 United States Code [U.S.C.] 1531–1544), as amended (ESA), protects federally listed threatened and endangered species from unlawful take. "Take" under ESA includes activities such as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The United States Fish and Wildlife Service (USFWS) regulations define harm to include some type of "significant habitat modification or degradation."

Section 7 of the ESA requires federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat. When a federal agency action, such as issuance of a permit or grant of ROW, may affect a federally listed species, the federal agency initiates consultation with USFWS. The final product of Section 7 consultation is a biological opinion in which USFWS determines whether the proposed action is likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. If the determination is yes, the USFWS will recommend reasonable and prudent alternatives to the proposed action that would reduce the level of impact to no jeopardy/no adverse modification of critical habitat. A biological opinion includes an incidental take statement that provides the federal agency and the project applicant with incidental take authority for the activities evaluated in the biological opinion. The regulations implementing Section 7 of ESA require federal agencies to conference with the USFWS for any species that is proposed as a candidate for federal listing so that USFWS can provide non-binding recommendations that will avoid or minimize impact to the species. The USFWS may, if requested, conduct the conference as a formal consultation by providing a conference opinion and incidental take statement. If the species becomes listed, the USFWS may adopt the incidental take statement provided in the biological opinion, thus conferring incidental take authority.

National Environmental Policy Act. The National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.) was signed into law on January 1, 1970. The Act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. NEPA requires Federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of, and reasonable alternatives to, their proposed actions.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act of 1918 (MBTA;16 U.S.C. 703 et seq.) is a federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The number of bird species covered by

the MBTA is extensive and listed at 50 Code of Federal Regulations (CFR) 10.13. The regulatory definition of “migratory bird” is broad, and includes any mutation or hybrid of a listed species and any part, egg, or nest of such birds (50 CFR 10.12). Migratory birds are not necessarily federally listed endangered or threatened species under the ESA. The MBTA, which is enforced by USFWS, makes it unlawful “by any means or in any manner, to pursue, hunt, take, capture, [or] kill” any migratory bird, or attempt such actions, except as permitted by regulation. The applicable regulations prohibit the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11).

Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940 and as amended, prohibits anyone, without a permit issued by the USFWS, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." For purposes of these guidelines, "disturb" means: “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

California Fish and Game Code 3503.5. Raptors (birds of prey) and active raptor nests are protected by the California Fish and Game Code 3503.5, which states that it is “unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird” unless authorized (California Department of Fish and Game [CDFG] 1991).

California Fish and Game Code 3503. Bird nests and eggs are protected by the California Fish and Game Code 3503, which states “it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.”

California Fish and Game Code 3513. Protects California’s migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.

State of California Fully Protected Species. The classification of Fully Protected was the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds, and mammals. Most fully protected species have also been listed as threatened or endangered species under ESA and/or California Endangered Species Act (CESA). Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for

collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Native Plant Protection Act. The Native Plant Protection Act (*California Fish and Game Code Section. 1900-1913*) (NPPA) prohibits the taking, possessing, or sale within the state of any plant listed by CDFG as rare, threatened, or endangered. An exception to this prohibition in the Act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFG at least 10 days prior to the initiation of activities that would destroy them. The NPPA exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way."

Federal Water Pollution Control Act (Clean Water Act, 1972. The Clean Water Act (CWA; 33 U.S.C. 1251 et seq.), as amended, provides a structure for regulating discharges into the waters of the U.S. Through this Act, the Environmental Protection Agency is given the authority to implement pollution control programs. These include setting wastewater standards for industry and water quality standards for contaminants in surface waters. The discharge of any pollutant from a point source into navigable waters is illegal unless a permit under its provisions is acquired. In California, the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) are responsible for implementing the CWA. Section 404 of the CWA regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other U.S. waters. The U.S. Army Corps of Engineers (ACOE) is the federal agency authorized to issue Section 404 Permits for certain activities conducted in wetlands or other U.S. waters. Section 401 of the CWA grants each state the right to ensure that the State's interests are protected on any federally permitted activity occurring in or adjacent to Waters of the State. In California, the RWQCB are the agency mandated to ensure protection of the State's waters. For a proposed project that requires an ACOE CWA Section 404 permit and has the potential to impact Waters of the State, the Regional Water Quality Control Board will regulate the project and associated activities through a Water Quality Certification determination (Section 401).

California Environmental Quality Act (CEQA). The California Environmental Quality Act of 1970 (CEQA), Public Resources Code (PRC) 21100 et seq., requires lead agencies to evaluate the environmental impact associated with a proposed project. CEQA requires that a local agency prepare an Environmental Impact Report (EIR) on any project it proposes to approve that may have a significant effect on the environment. The purpose of an EIR is to provide decision-makers, public agencies, and the general public with an objective and informational document that fully discloses the potential environmental effects of a proposed project. The EIR process is specifically designed to objectively evaluate and disclose potentially significant direct, indirect, and cumulative impact of a proposed project; to identify alternatives that reduce or eliminate a project's significant effects; and to identify feasible measures that mitigate significant effects of a

project. In addition, CEQA requires that an EIR identify those adverse impacts that remain significant after mitigation.

California Fish and Game Code, Section 1600, as amended. Under Section 1602 of the Fish and Game Code, CDFG regulates activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. CDFG has jurisdiction over riparian habitats (e.g., southern willow scrub) associated with watercourses. Jurisdictional waters are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider. CDFG jurisdiction does not include tidal areas or isolated resources. Section 1602 of the Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake or use materials from a streambed to notify the CDFG before beginning the project. If the CDFG determines that the project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.

Porter–Cologne Water Quality Control Act, as amended. The Porter–-Cologne Act grants the State Water Resource Control Board (SWRCB) and the RWQCBs power to protect water quality and is the primary vehicle for implementation of California's responsibilities under the federal Clean Water Act. Any person proposing to discharge waste within any region must file a report of waste discharge with the appropriate regional board.

California Desert Conservation Area (CDCA). The CDCA encompasses 25 million acres of land in southern California that were designated by Congress in 1976 through Federal Lands and Policy Management Act. The BLM directly administers approximately 10 million acres of the CDCA (BLM 1980). The CDCA Plan-designated Yuha Basin Area of Critical Environmental Concern (ACEC) Management Plan (BLM 1981) was prepared to give additional protection to unique cultural resource and wildlife values found in the region while also providing for multiple use management. The ACEC Management Plan allows for the "traversing of the ACEC by proposed transmission lines and associated facilities if environmental analysis demonstrates that it is environmentally sound to do so."

2.0 Survey Methods

Data regarding biological resources within the project area were obtained through field reconnaissance and a literature review of applicable reference materials.

2.1 Field Surveys

The 1,713.4-acre survey area encompasses the entire solar field, the 120-foot-wide ROWs along the transmission line routes, and a buffer of varying size on either side of the transmission line ROWs. The survey area is shown on Figure 3 and includes the following project components:

- R-1 ISEC West Solar Field (1,128 acres)
- IVW-1 Transmission Line 500-foot corridor (120-foot ROW + 190-foot survey buffer; 362.2 acres)
- IVW-2 Transmission Line (IVW-2 and IVW-2A) 300-foot corridor (120-foot ROW + 90-foot survey buffer; 192.4 acres)

This report encompasses data collected in March, April, May, and June 2010. Additional focused survey to be conducted will be reported under separate cover. Dates, times, weather conditions, and personnel for all surveys are listed in Table 1.

An additional survey area was added to the project in July 2010. General biological surveys, focused burrowing owl surveys, and a preliminary jurisdictional delineation were conducted in July 2010; however, a spring rare plant survey of this project component was not conducted. A spring rare plant survey will be conducted for this component in spring 2011 if necessary.

- IVW-2 Alternative B Transmission Line segment IVW-2B, 120-foot corridor (30.8 acres)

2.1.1 General Biological Survey

A general biological survey of the 1,713.4-acre survey area was conducted by RECON biologists Cheri Bouchér and Carianne F. Campbell on March 24, 2010, with supplemental surveying from March 29 through April 15, 2010. These surveys were conducted to map vegetation communities, inventory species present at the time of the survey, and assess the presence or potential for occurrence of sensitive and priority plant and animal species within the project area.

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR ISEC WEST PROJECT SURVEYS

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
03/24/2010	ALL	N/A	Vegetation mapping, general biological survey	Cheri Bouchér Carianne Campbell	8:00 A.M.; 50ºF; winds 7–10 mph; 0% cloud cover	4:15 P.M.; 80ºF; winds 0–4 mph; 0% cloud cover	N/A
03/29/2010	R-1	71	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Karyl Palmer	1:30 P.M.; 85ºF; winds 0–1 mph; sunny with 60% high haze	5:00 P.M.; 87ºF; winds 0–1 mph; sunny with 60% high haze	6.8
03/30/2010	R-1	258	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Karyl Palmer	7:00 A.M.; 72ºF; winds 0–1 mph; 5% cloud cover	1:00 P.M.; 82ºF; winds 3–5 mph; 10% cloud cover	14.3
03/30/2010	ALL	N/A	Vegetation mapping, general biological survey	Cheri Bouchér Carianne Campbell Karyl Palmer	2:00 P.M.; 80ºF; winds 7–13 mph; 10% cloud cover	5:00 P.M.; 77ºF; winds 5–10 mph; 5% cloud cover	N/A
03/31/2010	R-1	320	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	9:30 A.M.; 67ºF; winds 20–30 mph; 30% cloud cover	3:30 P.M.; 75ºF; winds 30 mph; 50% cloud cover	13.3
04/01/2010	R-1	320	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	12:45 P.M.; 68ºF; winds 2–4 mph; 20% cloud cover	5:45 P.M.; 73ºF; winds 0–2 mph; 10% cloud cover	16
04/02/2010	R-1	150	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	8:00 A.M.; 56ºF; winds 2–3 mph; 15% cloud cover	10:30 A.M.; 65ºF; winds 0–1 mph; 5% cloud cover	15
04/05/2010	IVW-1	170	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	12:00 P.M.; 70ºF; winds 20–40 mph; 50 % cloud cover	4:00 P.M.; 75ºF; winds 20–40 mph; 30 % cloud cover	10.6

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE ISEC WEST PROJECT SURVEYS (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
04/06/2010	IVW-1	184	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	9:00 A.M.; 65ºF; winds 2–4 mph; 0% cloud cover	1:00 P.M.; 77ºF; winds 4–7 mph; 0% cloud cover	11.5
04/07/2010	IVW-2	82	Rare Plant Survey #1	Carianne Campbell Gerry Scheid Peter Dolan	8:30 A.M.; 68ºF; winds 2–5 mph; 0% cloud cover	11:00 A.M.; 74ºF; winds 5–8 mph; 0% cloud cover	10.9
04/07/2010	IVN	26	Rare Plant Survey #1	Cheri Bouchér	9:00 A.M.; 70ºF; winds 5–8 mph; 0% cloud cover	11:00 A.M.; 74ºF; winds 5–8 mph; 0% cloud cover	13.0
04/07/2010	IVW-2	46	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	12:00 P.M.; 75ºF; winds 5–8 mph; 0% cloud cover	2:00 P.M.; 78ºF; winds 3–7 mph; 0% cloud cover	5.8
04/07/2010	ALL	N/A	Vegetation mapping, general biological survey	Cheri Bouchér Carianne Campbell	2:00 P.M.; 78ºF; winds 3–7 mph; 0% cloud cover	4:00 P.M.; 78ºF; winds 5–7 mph; 2% cloud cover	N/A
04/14/2010	IVW-2	65	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell	9:00 A.M.; 68ºF; winds 1–2 mph; 0% cloud cover	1:00 P.M.; 75ºF; winds 1–2 mph; 0% cloud cover	8.1
5/10/2010	R-1	N/A	Genreal biological survey	Cheri Bouchér Carianne Campbell	7:00 A.M.; 65ºF; winds 5–7 mph; 3% cloud cover	9:00 A.M.; 74ºF; winds 5–7 mph; 0% cloud cover	-
05/10/2010	R-1 IVW-1, IVW-2	60	Rare Plant Survey #2	Cheri Bouchér Carianne Campbell	9:00 A.M.; 74ºF; winds 5–7 mph; 0% cloud cover	4:00 P.M.; 82ºF; winds 5–9 mph; 0% cloud cover	4.28
6/1/2010	R-1	247	BUOW Survey #1	Cheri Bouchér Rob Hastings Colby Henley Rob Klotz Jake Mohlmann Daniela Fromer	5:45 P.M.; 98ºF; winds 15–25 mph; 10% cloud cover	8:45 P.M.; 86ºF; winds 15–30 mph; 5% cloud cover	<15
6/2/2010	R-1	236	BUOW Survey #1	Cheri Bouchér Rob Hastings Colby Henley Rob Klotz Jake Mohlmann Daniela Fromer	5:00 A.M.; 70ºF; winds 0 mph; 1% cloud cover	8:00 A.M.; 79ºF; winds 0 mph; 5% cloud cover	<15

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE ISEC WEST PROJECT SURVEYS (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/2/2010	IVW-1	360	BUOW Survey #1	Cheri Bouchér Daniela Fromer Rob Hastings Colby Henley Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 96ºF; winds 0 mph; 50% cloud cover	8:45 P.M.; 85ºF; winds 0 mph; 30% cloud cover	<15
6/3/2010	IVW-2	225	BUOW Survey #1	Daniela Fromer Rob Hastings Colby Henley Rob Klotz Jake Mohlmann	5:00 A.M.; 65ºF; winds 0 mph; 0% cloud cover	8:00 A.M.; 80ºF; winds 0 mph; 0% cloud cover	<15
6/3/2010	IVW-2/IVN	200	BUOW Survey #1	Cheri Bouchér Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 100ºF; winds 0–1 mph; 10% cloud cover	8:30 P.M.; 90ºF; winds 0–1 mph; 5% cloud cover	<15
6/4/2010	IVW-1	225	BUOW Survey #1	Cheri Bouchér Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 71ºF; winds 0 mph; 5% cloud cover	8:00 A.M.; 78ºF; winds 0 mph; 5% cloud cover	<15
6/7/2010	IVW-1, IVW-2	270	BUOW Survey #1	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:30 P.M.; 107ºF; winds 12 mph; 2% cloud cover	8:30 P.M.; 98ºF; winds 13 mph; 2% cloud cover	<15
6/9/2010	R-1	247	BUOW Survey #2	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	6:00 P.M.; 100ºF; winds 13 mph; 0% cloud cover	8:45 P.M.; 88ºF; winds 7 mph; 1% cloud cover	<15

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE ISEC WEST PROJECT SURVEYS (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/10/2010	R-1	236	BUOW Survey #2	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 83ºF; winds 15 mph; 30% cloud cover	8:00 A.M.; 85ºF; winds 21 mph; 5% cloud cover	<15
6/11/2010	IVW-2	270	BUOW Survey #2	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 75ºF; winds 15 mph; 80% cloud cover	8:00 A.M.; 77ºF; winds 17 mph; 30% cloud cover	<15
6/14/2010	IVW-1	315	BUOW Survey #2	Cheri Bouchér Jillian Bates Rob Hastings Wendy Loeffler Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 102ºF; winds 4 mph; 1% cloud cover	8:45 P.M.; 90ºF; winds 0–4 mph; 0% cloud cover	<15
6/15/2010	IVW-2	225	BUOW Survey #2	Cheri Bouchér Jillian Bates Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 74ºF; winds 0 mph; 0% cloud cover	8:00 A.M.; 84ºF; winds 0 mph; 0% cloud cover	<15
6/15/2010	IVW-1	270	BUOW Survey #2	Jillian Bates Rob Hastings Wendy Loeffler Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 102ºF; winds 8–18 mph; 0% cloud cover	8:45 P.M.; 92ºF; winds 1–4 mph; 0% cloud cover	<15

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE ISEC WEST PROJECT SURVEYS (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/16/2010	IVW-1	315	BUOW Survey #2	Cheri Bouchér Jillian Bates Wendy Loeffler Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 73ºF; winds 0–2 mph; 0% cloud cover	8:00 A.M.; 86ºF; winds 1–5 mph; 0% cloud cover	<15
6/18/2010	R-1	225	BUOW Survey #3	Cheri Bouchér Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 80ºF; winds 0–5 mph; 0% cloud cover	8:00 A.M.; 83ºF; winds 2.5 mph; 0% cloud cover	<15

ºF = degrees Fahrenheit; mph = miles per hour; % = percent

Vegetation communities were mapped within the survey area on a one-inch-equals-400-feet color aerial photograph taken in the summer of 2009. In addition, the vegetation communities within a 1,000-foot buffer of the survey area were mapped in order to characterize the surrounding habitat. All plant species observed within the project area were recorded, and plants that could not be identified in the field were collected for identification with taxonomic keys. Animal species observed directly or detected from calls, tracks, scat, nests, or other sign were recorded. The wildlife survey was limited by seasonal and temporal factors. Nocturnal animals were not observed directly, as the survey was performed during the day. In addition, species that are present within the area as fall migrants may not have been detected at the time of the survey.

2.1.2 Focused Rare Plant Survey

The survey also included a directed search for special status plants that would have been apparent during the time of the survey. Two surveys were conducted: a complete survey designed to cover 100 percent of the project area in March–April 2010 and a follow-up intuitive controlled survey in May 2010. The surveys included a directed search for special status plants that would have been apparent during the time of the surveys. Rare plant surveys followed the *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species* (BLM 2009).

The complete floristic survey was conducted within the survey area between March 24 and May 11, 2010. Survey transects were conducted by two biologists walking roughly parallel transects approximately 15–30 meters apart, depending on topography and homogeneity of vegetation in the area. Biologists had overlapping fields of vision at this distance, resulting in very thorough survey coverage. Survey routes (aka “track logs”) and locations of rare plants were mapped using a Trimble Geographical Positioning System (GPS) with sub-meter accuracy.

This second spring survey followed the “Intuitive Controlled Survey” protocol (BLM 2009) in order to further investigate habitats that were identified during the primary focused survey as having a higher potential for the presence of special status species. This survey included a focused and intensive survey in uplands with rocky cobble substrates and washes and provided an opportunity to make additional species identifications based on phenological characters that were not present during the initial survey.

Floral nomenclature follows Baldwin et al. (2002) for common plants and California Native Plant Society (CNPS 2001) for sensitive plants (as updated by the Jepson Flora Project Jepson Online Interchange [2009]). Zoological nomenclature is in accordance with the American Ornithologists’ Union Checklist (1998), with Unitt (2004) for birds, with Baker et al. (2003) and Hall (1981) for mammals, and with Crother (2001) and Crother et al. (2003) for amphibians and reptiles.

2.1.3 Focused Burrowing Owl Surveys

Focused nesting season surveys for the ISEC Project in accordance with the 1993 California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993). Data from the 2010 surveys have been incorporated into this report, including species observations and survey dates/personnel.

2.1.4 Southwestern Willow Flycatcher Surveys

RECON conducted focused nesting season surveys for the ISEC Project in accordance with the recently revised survey protocol (Sogge et al. 2010). The protocol (Sogge et al. 2010) stipulates five surveys be conducted during three distinct survey periods, May 15 to May 31, June 1 to June 24, and June 25 to July 17. Surveys were initiated in June, after detecting a willow flycatcher (*Empidonax traillii*) within the survey area, in order to determine subspecies and migratory status of the species present. Because the first survey period had already past, RECON decided to conduct four surveys—two during the each two remaining survey periods, each at least five days apart.

2.1.5 Jurisdictional Delineation

RECON biologists conducted a preliminary jurisdictional waters delineation within the Imperial Solar Energy Center West (ISEC West) project area. Methods for delineating wetlands followed guidelines set forth by the ACOE including *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (ACOE 2008a) and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (ACOE 2008b). Jurisdictional waters of the State were also delineated in accordance with CDFG and RWQCB, as described later in this report.

2.2 Literature Review

Determination of the potential occurrence for listed, sensitive, or noteworthy species is based upon known ranges and habitat preferences for the species (State of California 2009 and 2010a; CNPS 2001; Reiser 2001), species occurrence records from the California Natural Diversity Database (CNDDB; State of California 2010b), the BLM Special Status plant and wildlife species website (BLM 2010), and species occurrence records from other sites in the vicinity of the survey area.

Additional resources that were consulted included the Biological Technical Report for Imperial Valley to La Rosita 230-kV Line, Imperial Valley, California (RECON 2001), the *Draft Environmental Impact Statement for the SES Solar Two* (URS 2008), and *Early Spring 2010 Botanical Surveys for Imperial Valley Solar* (URS 2010).

3.0 Existing Conditions

3.1 Topography and Soils

The 1,713.4-acre survey area is located in a Colorado Desert lowland between agricultural fields to the east and Mount Signal to the west. Alluvial fans and washes run through the site at various locations, flowing northeast from Mount Signal to enter the Westside Main Canal that skirts the edge of the active agricultural fields. The proposed IV West solar field is located within land previously used for agricultural fields. The majority of the fields have been abandoned approximately 10 years, and the farm-field topography, including furrows, irrigation ditches, culverts, and berms separating the fields, are still prominent. The southwestern-most parcel within the proposed IV West solar field appears to have been abandoned longer, as the agricultural furrows are less evident and many native plant species have re-established. Along the proposed transmission corridors that run southeast from the solar field, the large Yuha Wash and other minor washes bisect the transmission corridors at numerous locations. The upland topography between the washes is relatively flat, with sparse vegetation and varying degrees of desert pavement on the surface. Elevation of the survey area ranges from sea level to 30 feet above mean sea level (USGS 1976a, USGS 1976b, and USGS 1979).

There are seven major soil types found within the survey area: Glenbar, Imperial, Indio-Vint, Vint, Meloland, Niland, and Rositas soils (NRCS 2006 and 2010).

- Glenbar Complex soils are found on flat basin floors and formed from mixed alluvium. This soil accounts for a large percentage of the upland areas within IVW-1 and IVW-2.

- Imperial soils are silty clay soils found on flat basin floors and consist of clayey alluvium derived from mixed sources and/or clayey lacustrine deposits. This soil is found on the east end of the proposed solar field, adjacent to the canal.

- Indio-Vint complex is made primarily of Indio and Vint soils, both of which are found on flat basin floors and formed from mixed alluvium or sandy eolian material. Both the Indio-Vint and Vint soils are found within the proposed solar field.

- Meloland soils are fine sands found on flat basin floors and formed from mixed alluvium or sandy eolian material. A large percentage of the proposed solar field and a small section at the north end of IVW-1 contain Meloland soils.

- Niland gravelly sand occurs on basin floors, and its parent material consist of alluvium derived from mixed sources. This soil occurs within the Yuha Wash across IVW-1 and IVW-2.

- Rositos soils are sandy soils found on flat basin floors and formed from mixed alluvium or sandy eolian material typically found on dunes and sand sheets (NRCS 2009). Rositas soils account for a large percentage of the proposed solar field and upland area within IVW-1 and IVW-2.

3.2 General Vegetation

A total of 87 plant species, representing 28 plant families, were identified within the project area. Of this total, 72 (83 percent) are native to southern California and 15 (17 percent) are non-native, introduced species.

As shown in Attachment 1: Figure 4, seven vegetation communities were mapped within the survey area including creosote bush–white burr sage scrub, desert wash (smoke tree woodland and big galletta shrub steppe mix), mesquite thicket, tamarisk thicket, open water, abandoned agricultural fields (upland mustard), and active agricultural fields. Vegetation community classifications follow *A Manual of California Vegetation* (Sawyer, Keeler-Wolfe and Evens 2009). Under *A Manual of California Vegetation,* vegetation communities are classified by the dominant or co-occurring species, and are referred to as Alliances. Table 2 below lists the acreage of each vegetation community in relation to the project components.

TABLE 2
VEGETATION COMMUNITIES/LAND COVER TYPES WITHIN ISEC WEST PROJECT SURVEY AREA

Vegetation Community/ Land Cover Type	R-1 (acres)	IVW-1 (acres)	IVW-2 (acres)	IVW-2A (acres)	IVW-2B (acres)	Total (acres)
Creosote bush–white burr sage scrub	0.1	344.2	88.5	99.0	30.8	562.6
Desert wash	6.7	17.6	4.8	-		29.1
Mesquite thicket	6.3	-	-	-		6.3
Tamarisk thicket	15.6	-	-	-		15.6
Arrow weed thicket	1.0	-	-	-		1.0
Open water	5.0	-	-	-		5.0
Abandoned agricultural fields	1,090.6	0.4	0.1	-		1,091.1
Active agricultural fields	0.6			-		0.6
Developed	2.1	-	-	-		2.1
TOTAL	1,128.0	362.2	93.4	99.0	30.8	1,713.4

Creosote bush–white burr sage scrub is the dominant vegetation community within the transmission line corridors in the survey area, and accounts for 562.6 acres (33 percent of the survey area). This native vegetation alliance is dominated by creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*) with relatively sparse

vegetative cover and very flat topography (Photograph 1). A layer of desert pavement is present between the shrubs in varying densities throughout the creosote bush-white burr sage vegetation. A number of annual species were observed during the spring surveys that offered a sparse herbaceous layer intermixed with the desert pavement (Photograph 2). These species included desert sunflower (*Geraea canescens*), desert sand verbena (*Abronia villosa* var. *villosa*), Peirson's browneyes (*Camissonia claviformis* ssp. *peirsonii*), pebble pincushion (*Chaenactis carophoclinea* var*. carophoclinea*), pincushion flower (*C. stevioides*), desert cambess (*Oligomeris linifolia*), narrow leaved forget-me-not (*Crypthantha angustifolia*), and Mediterranean grass (*Schismus barbata*).

A number of **desert washes**, including the large Yuha Wash, flow northeast through the transmission corridors from Mount Signal into the Westside Main Canal. These washes are braided with the main flow channels primarily lacking in vegetation, while the sandbars and banks support **smoke tree woodland** and/or **big galletta shrub steppe** vegetation alliances. The areas dominated by smoke tree woodland support a number species, including rayless encelia (*Encelia frutescens*), sweetbush (*Bebbia juncea*), individual honey mesquite trees (*Prosopis glandulosa*) and salt cedar trees (*Tamarix aphylla*), scattered saltbush shrubs, a moderate to sparse cover of big galletta grass (*Pleuraphis rigida*), and sparse creosote bush and white burr sage. A few locations that have larger dense patches of galletta grass adjacent to or in the middle of the smoke tree woodland are classified as big galletta shrub steppe.

A small **mesquite thicket**, dominated by honey mesquite, is present along the eastern edge of the proposed solar plant, adjacent to an irrigation ditch. A dense understory of quailbush (*Atriplex lentiformis*) is present along the edges of the thicket and in between the honey mesquite trees. A larger mesquite thicket is present outside of the survey area along the northeast border of the IV West solar farm. In this area, dense patches of honey mesquite are interspersed with tamarisk (*Tamarix* spp.) and creosote bush.

Rows of tamarisk trees are present along the edges of the abandoned agricultural fields. These trees form dense **tamarisk thickets** that preclude other plant species from establishing. Various discarded clothing and food articles indicate that the tamarisks are used as shelter by human immigrants passing through the area.

Arrow weed (*Pluchea sericea*) has established along the edges of the Westside Main Canal in many locations, forming 5-foot-deep **arrow weed thickets**. These thickets largely exclude other plant species, but weedy invasive species such as sow thistle (*Sonchus* sp.), Sahara mustard (*Brassica tournifortii*), and London rocket (*Sisymbrium irio*) grow along the banks in between the arrow weed thickets.

The Westside Main Canal borders the abandoned agricultural fields on the eastern edge of the ISEC West solar field. This canal is unvegetated but holding water, and is classified as **open water**.

PHOTOGRAPH 1
IVW-2: Sparse Creosote bush, White Burr Sage Scrub with Desert Pavement Cobble Layer

PHOTOGRAPH 2
Annual Wildflowers Blooming along IVW-1

The 1,091.1 acres of **abandoned agricultural fields** encompass the majority of the proposed ISEC West solar field. Many of these fields have been abandoned approximately 10 years, while the southwestern parcel appears to have been abandoned longer. While a number of weedy species have established since agricultural practices ceased, mustard species such as Sahara mustard and London rocket provide the dominant vegetative cover in most areas, and are classified in the **upland mustard vegetation alliance** (Photograph 3). Nettle-leaf goosefoot (*Chenopodioum murale*) and Mediterranean grass are also co-dominant species that provide significant vegetative cover, though the density and composition varies throughout the survey area. Other common species within the abandoned agricultural fields include narrow-leaved forget-me-not, desert cambess, and Peirson's browneyes. In addition, native perennials such as four-wing saltbush and desert holly are beginning to re-establish along the edges of the fields, adjacent to the canal and the Interstate 8.

3.3 General Wildlife

The wildlife species observed on-site were typical of the desert scrub, desert wash, and agricultural habitats, which provide cover, foraging, and breeding habitat for a variety of native wildlife species. Attachment 3 provides a list of all wildlife species observed.

3.3.1 Invertebrates

The project area contains suitable habitat for a wide variety of invertebrates. Within the abandoned agricultural fields and along the transmission line, two species of harvester ant (*Pogonomyrmex* spp.) were observed regularly. Cabbage white (*Pieris rapae*) and painted lady (*Vanessa cardui*) butterflies were also regularly observed nectaring on the annual flowers in all portions of the survey area.

3.3.2 Amphibians

Most amphibians require moisture for at least a portion of their life cycle, with many requiring a permanent water source for habitat and reproduction. Terrestrial amphibians have adapted to more arid conditions and are not completely dependent on a perennial or standing source of water. These species avoid desiccation by burrowing beneath the soil or leaf litter during the day and during the dry season.

No amphibians were detected within the canal, the only permanent water source within the survey area.

3.3.3 Reptiles

The diversity and abundance of reptile species varies with habitat type. Many reptiles are restricted to certain plant communities and soil types, although some of these

PHOTOGRAPH 3
Fallow Agricultural Fields within ISEC West,
Facing East toward Weside Canal

PHOTOGRAPH 4
Parasitic Thurber's Pilostyles on Indigo Bush within an ISEC West Solar Field

species would also forage in adjacent communities. Other species are more ubiquitous, using a variety of vegetation types for foraging and shelter.

Three reptile species were commonly observed throughout the survey area: desert iguana (*Dipsosaurus dorsalis*), common side-blotched lizard (*Uta standburiana*), and common zebra-tailed lizard (*Callisaurus draconoides*). Great Basin tiger whiptail (*Aspidoscelis tigris tigris*) and sidewinder rattlesnake (*Crotalus cerastes*) were observed throughout the survey area in fewer numbers, and five flat-tailed horned lizards (FTHL; *Phrynosoma mcallii*) were observed, three within the abandoned agricultural fields and two within creosote bush-white burr sage scrub northwest of the Imperial Valley Substation.

3.3.4 Birds

The diversity of bird species varies with respect to the character, quality, and diversity of vegetation communities. Due to the seasonal homogeneity of low habitat structure within the majority of the survey area, bird diversity was expectedly low, while it increased within the desert washes and thickets near the canal.

Birds commonly observed within the sparse creosote bush-white burr sage scrub and abandoned agricultural fields include horned lark (*Eremophila alpestris*), Gambel's quail (*Callipepla gambelii gambelii*), mourning dove (*Zenaida macroura marginella*), lesser nighthawk (*Chordeiles acutipennis*), Say's phoebe (*Sayornis saya*), black phoebe (*S. nigricans semiatra*), and white-crowned sparrow (*Zonotrichia leucophrys*). Two western burrowing owl (*Athene cunicularia hypugaea*) pairs with active burrows were also observed within the abandoned agricultural field using the berms that separate the fields.

The desert wash, mesquite thicket, tamarisk thicket, and more dense portions of creosote bush-white burr sage scrub were host to a number of bird species such as yellow-rumped warbler (*Dendroica coronata*), blue-gray gnatcatcher (*Polioptila caerulea*), black-tailed gnatcatcher (*P. melanura*), verdin (*Auriparus flaviceps*), song sparrow (*Melospiza melodia*), western kingbird (*Tyrannus verticalis*), and greater roadrunner (*Geococcyx californianus*).

A large number of cliff swallow (*Petrochelidon pyrrhonota tachina*) and northern rough-winged swallows (*Stelgidopteryx serripennis*) are present near the Interstate 8 bridge that crosses over the canal adjacent to the site. The underside of the bridge is host to hundreds of mud-nests. The arrow weed thickets along the canal and active agricultural fields also provide habitat for numerous red-winged black birds (*Agelaius phoeniceus*).

3.3.5 Mammals

Creosote bush–white burr sage scrub and desert wash communities typically provide cover and foraging opportunities for a variety of mammal species. Many mammal

species are nocturnal and must be detected during daytime surveys by observing their sign, such as tracks, scat, and burrows.

Desert black-tailed jackrabbit (*Lepus californicus deserticola*), desert cottontail (*Sylvilagus audubonii*), round-tailed ground squirrel (*Spermophilus tereticaudus*), desert kangaroo rat (*Dipodomys deserti deserti*), and coyote (*Canis latrans*) were detected often within all project component survey areas through direct observation as well as burrows, tracks, and scat.

3.4 Sensitive Biological Resources

3.4.1 Special Status Plant Species

There are a number of special status plant species that are known from the vicinity of the project area. Attachment 4 lists all species known from the vicinity that are listed by the federal or state government as threatened or endangered are listed as sensitive by BLM or CDFG. Locations of special status plant species found during the survey are presented in Attachment 1: Figure 5. Table 3 also provides a more detailed analysis of the potential of these species to occur in the survey area.

Although the majority of the special status plant species that have the potential to occur within the survey area would have been apparent during the Spring 2010 survey effort, there are a few species, such as Abram's sandmat (*Chamaesyce abramsiana*) and devil's claw (*Proboscidea althaeifolia*), which actively grow and bloom in the late summer and fall. An additional rare plant survey is planned for fall 2010 in order to potentially detect these species. This survey will target the habitats in which these species would be found, if present.

3.4.1.1 Federally Listed Species

Based on the literature review, one federally threatened plant species, Peirson's milkvetch (*Astragalus magdalena* var*. peirsonii*), was identified as having the potential to occur within the survey area. Critical habitat has been designated [and revised] for this species in the Algodones Dunes (USFWS 2008), which are located approximately 50 miles east of the project area. This species was not observed during focused spring rare plant surveys and is not expected to occur based on elevation and range restrictions (see Attachment 4).

3.4.1.2 State-listed Species

There were three state-listed species identified during the literature review as having the potential to occur within the survey area: Algodones Dunes sunflower (*Helianthus niveus* ssp. *tephrodes*), Wiggins' croton (*Croton wigginsii*), and Peirson's milkvetch (see Attachment 4). These species were not observed during focused spring rare plant

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN ISEC WEST PROJECT SURVEY AREA

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					Solar Field (R-1)	IVW-1	IVW-2/2A	IVW-2B
Amaranthaceae—Amaranth Family								
Amaranthus watsonii Watson's amaranth	-/-	4.3	-	Annual herb; blooms in spring; creosote bush scrub and wetlands.	Potential to occur within canal along the east edge of the survey area.	Not expected to occur due to lack of suitable wetland habitat.		
Asclepiadaceae—Milkweed Family								
Cynanchum utahense Utah vine milkweed	-/-	4.3	-	Perennial herb; blooms April–June; creosote bush scrub; <3,281 ft.	Not expected to occur. This perennial herb would have been observed during spring focused surveys.			
Asteraceae—Sunflower Family								
Chaenactis carphoclina var. peirsonii Peirson's pincushion	-/-	1B.3	BLM Sensitive	Annual herb; blooms March–April; creosote bush scrub; <1,640 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Helianthus niveus ssp. *tephrodes* Algodones Dunes sunflower	-/CE	1B.2	BLM Sensitive	Perennial herb; blooms March–May; dunes; <328 ft.	Not expected to occur. No suitable dune habitat is present within the survey area. In addition, this perennial herb would have been observed during spring focused surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN ISEC WEST SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Asteraceae—Sunflower Family (cont.)								
Malperia tenuis **brown turbans**	**-/-**	**2.3**	**-**	**Annual herb; blooms April and Dec; Sonoran desert scrub; sandy areas and rocky slopes; <1,640 ft.**	Not expected to occur. No suitable desert pavement habitat is present for this species.	High potential to occur. This species was observed within the adjacent IVW-2 corridor.	**Observed. One individual was observed in upland creosote scrub/desert pavement within the survey area.**	High potential to occur. This species was observed within the adjacent IVW-2 corridor.
Palafoxia arida var. *gigantea* giant Spanish needles	-/-	1B.3	BLM Sensitive	Dunes	Not expected to occur. No suitable dune habitat is present within the survey area. In addition, this perennial herb would have been observed during spring focused surveys.			
Xylorhiza cognata Mecca aster	-/-	1B.2	BLM Sensitive	Perennial herb; blooms Jan–June; creosote bush scrub; canyons; 65–787 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Xylorhiza orcuttii Orcutt's woody aster	-/-	1B.3	BLM Sensitive	Perennial herb; blooms March–April; creosote bush scrub; canyons; 65–984 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Boraginacaeae - Borage Family								
Cryptantha costata ribbed cryptantha	-/-	-	4.3	Annual herb; blooms Feb–May; creosote bush scrub, sandy soil; <1,640 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Cryptantha holoptera winged cryptantha	-/-	-	4.3	Annual herb; blooms March–April; creosote bush scrub, sandy soil; 328–3,937 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Brassicaceae—Mustard Family								
Lyrocarpa coulteri var. *palmeri* Coulter's lyrepod	-/-	-	4.3	Perennial herb; blooms April–Dec; creosote bush scrub; dry slopes, gravelly flats, and washes; <1,969 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Cactaceae—Cactus Family								
Cylindropuntia echinocarpa [=Opuntia wigginsii] Wiggins' cholla	-/-	3.3	-	Shrub; creosote bush scrub.	Not expected to occur. This species would have been observed during focused rare plant surveys.			
Cylindropuntia wolfii [=Opuntia wolfii] Wolf's' cholla	-/-	4	-	Shrub; blooms April-May; Alluvial fans and rocky slope in Sonoran desert scrub	Not expected to occur. This species would have been observed during focused rare plant surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Euphorbiaceae—Spurge Family								
Chamaesyce abramsiana Abram's sandmat	-/-	2.2	-	Annual herb; blooms Sept–Nov; creosote bush scrub; <656 ft.	Potential to occur. This annual herb would not have been observed during spring focused surveys.			
Chamaesyce arizonica Arizona sandmat	-/-	2.3	-	Perennial herb; blooms March–April; creosote bush scrub; <984 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Chamaesyce platysperma flat-seeded spurge	-/-	1B.2	BLM Sensitive	Annual herb; blooms May; dunes & sandy areas; <328 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Croton wigginsii Wiggins' croton	-/CR	2.2	BLM Sensitive	Shrub; blooms March–April; creosote bush scrub; dunes; <328 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Ditaxis serrata var. *californica* California ditaxis	-/-	3.2	-	Perennial herb; blooms April–Nov; creosote bush scrub; <656 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Tetracoccus hallii	-/-	4.3	-	Shrub; blooms March–May; creosote bush scrub; rocky slopes and washes; <3,937 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Fabaceae—Legume Family								
Astragalus crotolariae **Salton milkvetch**	**-/-**	**4.3**	**-**	**Perennial herb; blooms Jan–April; creosote bush scrub; 60–250 ft.**	Potential to occur within the desert wash vegetation in the southern half of this survey area.	**Observed. 3 individuals observed within the desert wash vegetation.**	Potential to occur within the desert wash vegetation in this survey area.	Low potential to occur due to the lack of sandy desert wash vegetation.
Astragalus insularis var. *harwoodii* Harwood's milkvetch	-/-	2.2	-	Annual herb; blooms Jan–May; desert dunes; open sandy flats or stony desert washes; mostly in creosote bush scrub.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Astragalus lentiginosus var. *borreganus* Borrego milkvetch	-/-	4.3	-	Annual herb; blooms March–May; creosote bush scrub, sandy areas; 98–820 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Astragalus magdalena var. *peirsonii* Peirson's milkvetch	PFE/CE	1B.2	BLM Sensitive	Perennial herb; blooms Dec–April; dunes; 164–656 ft.	Not expected to occur. There is no suitable dune habitat within the survey area. In addition, this perennial herb would have been observed within the survey area during focused rare plant surveys.			
Lotus haydonii pygmy lotus	-/-	1B.3	BLM Sensitive	Perennial herb; blooms March–June; creosote bush scrub; 1,969–3,937 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Fabaceae—Legume Family (cont.)								
Lupinus excubitis var. *medius* Mountain Springs bush lupine	-/-	1B.4	BLM Sensitive	Shrub; blooms March–April; creosote bush scrub; desert washes; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Parkinsonia microphylla [=Cercidium microphyllum] yellow paloverde	-/-	4.3	-	Tree; blooms April–May; creosote bush scrub.	Not expected to occur. This tree would have been observed during focused rare plant surveys.			
Lamiaceae—Mint Family								
Salvia greatae lavender sage	-/-	1B.3	BLM Sensitive	Shrub; blooms March–April; creosote bush scrub; alluvial slopes; 98–787 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Teucrium cubense ssp. *depressum* small coastal germander	-/-	2.2	-	Annual herb; blooms March–May; creosote bush scrub, sandy areas; <797 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Lennoaceae—Sand Food Family								
Pholisma sonorae sandfood	-/-	1B.2	BLM Sensitive	Perennial parasitic herb; blooms April–May; dunes; <656 ft.	Not expected to occur. There is no suitable dune habitat within the survey area. In addition, this species would have been observed within the survey area during spring focused rare plant surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Loasaceae—Blazing Star Family								
Mentzelia hirsutissima hairy stickleaf	-/-	2.3	-	Annual herb; blooms April–May; creosote bush scrub; washes, fans, and slopes; <1,969 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Mentzelia tridentata dentate blazing star	-/-	1B.3	BLM Sensitive	Annual herb; blooms April–May; creosote bush scrub; 2,296–3,280 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Malvaceae—Mallow Family								
Horsfordia alata pink velvet mallow	-/-	4.3	-	Shrub; blooms April and Nov–Dec; creosote bush scrub; rocky canyons and washes; 328–1,640 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Horsfordia newberryi Newberry's velvet mallow	-/-	4.3	-	Perennial herb; blooms March–April and Nov–Dec; creosote bush scrub; 328–2,625 ft.	Low potential to occur. This perennial herb would have been observed during spring rare plant focused surveys.			
Herrisantia crispa bladder mallow	-/-	2.3	-	Annual or perennial herb; creosote bush scrub.	Low potential to occur. This species would have been observed during spring rare plant focused surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Martyniaceae—Unicorn Plant Family								
Proboscidea althaeifolia devil's claw	-/-	4.3	-	Perennial herb; blooms in fall; creosote bush scrub; <3,281 ft.	Potential to occur in desert wash vegetation within the survey area.			Low potential to occur due to lack of desert wash vegetation.
Nyctaginaceae - Four O'Clock Family								
Mirabilis tenuiloba slender lobed four o'clock	-/-	4.3	-	Perennial herb; blooms March–May; creosote bush scrub; rocky slopes; <1,640 ft.	Low potential to occur. This perennial herb would have been observed during spring rare plant focused surveys.			
Onagraceae—Evening Primrose Family								
Camissonia arenaria Fortuna Range suncup	-/-	2.2	-	Annual or perennial herb; creosote bush scrub; rocky slopes; <1,411 ft.	Low potential to occur. This herb would have been observed during spring rare plant focused surveys.			
Polemoniaceae—Phlox Family								
Ipomopsis tenuifolia slenderleaf skyrocket	-/-	2.3	-	Perennial herb; blooms March–May; creosote bush scrub; gravelly to rocky slopes and canyons; 328–3,937 ft.	Low potential to occur. This perennial herb would have been observed during spring rare plant focused surveys.			
Poaceae—Grass Family								
Imperata brevifolia satintail	-/-	2.1	-	Perennial grass; blooms Sept–May; creosote bush scrub; <1,640 ft.	Not expected to occur. This perennial rhizomatous grass would have been observed during focused rare plant surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Polemoniaceae—Phlox Family								
Ipomopsis effusa Baja California ipomopsis	-/-	2.1	-	Annual herb; alluvial fans.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Polygonaceae—Knotweed Family								
Nemacaulis denudata var. *gracilis* slender woolly heads	-/-	2.2	-	Annual herb; blooms March–May; dunes; <1,312 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Rafflesiaceae—Rafflesia Family								
***Pilostyles thurberi* Thurber's pilostyles**	**-/-**	**4.3**	**-**	**Perennial herb (parasitic); blooms January; Sonoran desert scrub; sandy alluvial plains; <984 ft.**	**Observed. Detected on 49 indigo-bush (*Psorothamnus emoryi*) shrubs within the survey area.**	Potential to occur on the few indigobush shrubs within the survey area.		Not expected to occur. No indigobush was observed within the survey area.
Rhamnaceae—Buckthorn Family								
Colubrinia californica	-/-	2.3	-	Shrub; blooms April–May; creosote bush scrub; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Condalia globosa var. *pubescens* spiny crucillo	-/-	4.2	-	Shrub; blooms March–April; creosote bush scrub; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			

TABLE 3
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE ISEC WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2/2A	IVW-2B
Selaginellaceae—Spikemoss Family								
Selaginella eremophila desert spike moss	-/-	2.2	-	Perennial fern; creosote bush scrub; shaded crevices and rocky places; <2,953 ft.	Low potential to occur. This perennial herb would have been observed during spring focused rare plant surveys.			
Solanaceae—Nightshade Family								
Lycium parishii Parish's desert thorn	-/-	2.3	-	Shrub; blooms March–April; Sonoran desert scrub; sandy–rocky slopes and canyons; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Sterculiaceae—Cocoa Family								
Ayenia compacta desert ayenia	-/-	2.3	-	Perennial herb/shrub; blooms March–April; washes and dry rocky canyons; <1,640 ft.	Low potential to occur. This perennial herb would have been observed during spring focused rare plant surveys.			

FEDERAL LISTED PLANTS

PFE = Proposed Federally listed endangered

STATE-LISTED PLANTS

CE = State-listed endangered
CR = State-listed rare

CALIFORNIA NATIVE PLANT SOCIETY LISTS

1A = Species presumed extinct.
1B = Species rare, threatened, or endangered in California and elsewhere; eligible for state listing.
2 = Species rare, threatened, or endangered in California but more common elsewhere; eligible for state listing.
3 = Species for which more information on distribution, endangerment, and/or taxonomic information is needed.
4 = A watch list of species of limited distribution, that need to be monitored for changes in population status.

BUREAU OF LAND MANAGEMENT

Sensitive = Identified as BLM sensitive

surveys, and are not expected to occur within the survey area based on elevation and the lack of suitable habitat.

3.4.1.3 BLM Sensitive Species

BLM sensitive species include all species currently on CNPS List 1B, as well as others that are designated by the California BLM State Director. Several BLM sensitive species were identified as having the potential to occur within the survey area (see Attachment 4). These species were not observed during focused spring rare plant surveys, and either have a low potential to occur or are not expected to occur within the survey area based on elevation and the lack of suitable habitat.

3.4.1.4 Priority Plant Species

Priority plant species are rare, unusual, or key species that are not sensitive by BLM or listed as threatened and endangered. Priority plant species are specifically plants that are included on the CNPS Lists 2–4.

Four priority plant species were observed within the survey area and vicinity during spring rare plant surveys, including brown turbans (*Malperia tenuis*), Salton milkvetch (*Astragalus crotolariae*), Thurber's pilostyles (*Pilostyles thurberi*), and Parish's desert-thorn (*Lycium parishii*). These species are discussed below. Two additional species, Abram's sandmat (*Chamaesyce abramsiana*) and devil's claw (*Proboscidea althaeifolia*), have potential to occur within the survey area. These species bloom in the fall and were not detected by the spring surveys. An additional survey is planned for fall 2010 in order to evaluate the presence or absence of these species in the survey area.

Brown turbans (*Malperia tenuis*). Brown turbans is a CNPS (2001) List 2 species. It is an inconspicuous annual herb in the sunflower family (Asteraceae) that grows less than 16 inches tall with pink-tinged to brownish flowers that bloom March to April and in December (Baldwin et al. 2002; Munz 1974). Its range is the Sonoran desert in San Diego and Imperial Counties and northern Baja California, Mexico. It grows in creosote-bush scrub below 1,100 feet (CNPS 2001), on arid slopes with shallow soils and rocky surface rubble, volcanic flats and slopes, and on rocky ridges (Reiser 2001). The presumed rarity of this species may be due to under-reporting of the cryptic plant (Reiser 2001).

As seen on Attachment 1: Figure 5a, two brown turbans plants were observed during spring rare plant surveys, one within the IVW-2 corridor and one just outside of the corridor. These plants were found within the creosote bush-white burr sage scrub vegetation with a soil surface layer of dense desert pavement.

Salton milkvetch (*Astragalus crotalariae*). Salton milkvetch is a CNPS List 4 species. It is a robust, malodorous, short-lived perennial herb in the legume family (Fabaceae)

that flowers from January to April (Munz 1974). It is distributed at elevations between 200 and 800 feet in the Sonoran Desert of Arizona, California, and Baja California. It prefers to grow in barren, sandy areas with mild soil disturbance (Reiser 2001).

Salton milkvetch was found at one location within the IVW-1 corridor, and one location adjacent to, but outside of, the IVW-2 corridor. At both locations, this species was within the Yuha Wash encompassed by desert wash vegetation.

Thurber's pilostyles (*Pilostyles thurberii*). Thurber's pilostyles is a CNPS List 4 species. It is a perennial stem-parasite in the rafflesia family (Rafflesiaceae) that shows only its flowers and bracts on the stem of its host plant. The brown or maroon flowers are less than 1/10 inch across and bloom in January. The host plant is an indigo bush (*Psorothamnus* spp.), usually Emory's indigo bush (*P. emoryi*). While Emory's indigo bush occurs in both the southern Mojave and Sonoran deserts, in California Thurber's pilostyles is limited to the southern Sonoran Desert in Riverside, San Diego, and Imperial Counties, where it occurs in open desert scrub below 1,000 feet. Thurber's pilostyles also occurs in Baja California and as far east as Texas (Baldwin et al. 2002).

Thurber's pilostyles was observed on 49 Emory's indigo bush shrubs located within and adjacent to a desert wash in the southern half of the proposed solar field (see Photograph 4 on page 27).

Parish's desert-thorn (*Lycium parishii*). Parish's desert-thorn is a CNPS List 2 species. It is an intricately branched spiny shrub in the nightshade family (Solanaceae) that may grow 10 feet tall and produces purplish tubular flowers in March and April (Munz 1974). Parish's desert thorn is found from Sonora, Mexico, and Arizona to Riverside, Imperial, and eastern San Diego counties; it is thought to be extirpated from the San Bernardino Valley (Munz 1974; CNPS 2001). The habitat for Parish's desert-thorn is sandy to rocky slopes in creosote-bush desert scrub at elevations below 3,300 feet. It may occur in coastal scrub habitat as well (CNPS 2001).

The desert-thorn plants that were observed in the survey area and vicinity (see Figure 4a) exhibited intermediate morphological characteristics between *L. parishii* and *L. brevipes*. Flowers were observed (on individual and separate plants) with 4 and 5 petals, which is characteristic of *L. brevipes*. However, the plants were very intricately branched, which is characteristic of *L. parishii*, as opposed to spreading branches, as in *L. brevipes*. Due to the number of characteristics consistent with *L. parishii*, we have treated this species as *L. parishii*.

Parish's desert-thorn was found at two locations in the vicinity of the survey area near IVW-1 and IVW-2. At both locations, this species was within the Yuha Wash encompassed by desert wash vegetation.

3.4.2 Special Status Wildlife Species

A number of special status wildlife species were evaluated for the potential to occur within the survey area. Table 4 provides a summary of those species and their potential to occur. Ten of these species are discussed in detail below, including federally listed species, state listed species, and BLM sensitive species that are known to occur in the Imperial Valley, as well as CDFG species of special concern that were observed during surveys.

3.4.2.1 Federally Listed Species

Five federally listed or proposed listed wildlife species were evaluated based on their presence on their occurrences in Imperial County: FTHL, Yuma clapper rail (*Rallus longirostris yumanensis*), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo bellii pusillus*), and Peninsular bighorn sheep (*Ovis canadensis nelsoni*). Each of these species is discussed below (see Table 4).

Flat-tailed Horned Lizard (*Phrynosoma mcallii*)—Proposed Threatened

Species

In California, the FTHL was designated a sensitive species by the BLM in 1980. In 1988, a petition was submitted to the California Fish and Game Commission (CFGC) to list the species as endangered. In 1989, the commission voted against the proposed listing. In 1993, the USFWS published a proposed rule to list the FTHL as a threatened species (USFWS 2010a). In 2006, the USFWS withdrew its proposal (USFWS 2006). On March 2, 2010, USFWS re-instated the 1993 proposed listing of the FTHL as federally threatened (USFWS 2010a). The Ninth Circuit Court of Appeals has ordered the USFWS to make a final listing determination by November 3, 2010.

FTHL has the typical flattened body shape of horned lizards. It is distinguished from other species in its genus by its dark dorsal stripe, lack of external openings, broad flat tail, and comparatively long spines on the head (Funk 1981 as cited in Interagency Coordinating Committee [ICC] 2003). The FTHL has two rows of fringed scales on each side of its body. The species has cryptic coloring, ranging from pale gray to light rust brown dorsally and white or cream ventrally with a prominent umbilical scar. The only apparent external difference between males and females is the presence of enlarged postanal scales in males. Maximum snout-vent length for the species is 3.3 inches (Muth and Fisher 1992 as cited in ICC 2003).

FTHLs escape extreme temperatures by digging shallow burrows in the loose sand. Adults are primarily inactive from mid-November to mid-February. Juvenile seasonal activity is often dependent on temperature fluctuations. Breeding activity takes place in

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
REPTILES (Nomenclature from Crother 2001 and Crother et al. 2003)							
GEKKONIDAE GECKOS							
Switak's banded gecko *Coleonyx switaki*	ST	-	Rock outcrops on arid hillsides and canyons in desert scrub vegetation types.	Not expected to occur. There is no suitable rocky habitat for this species within the survey area.			
IGUANIDAE IGUANID LIZARDS							
Flat-tailed horned lizard *Phrynosoma mcalli*	FPT	Sensitive	Dunes and sandy flats of low desert.	**Observed. Three were observed within the fallow agricultural fields.**	**Observed immediately adjacent to the survey area.**	**Observed. Two individuals observed within in creosote scrub habitat.**	**Observed immediately adjacent to the survey area.**
Colorado desert fringe-toed lizard *Uma notata notata*	CSC	Sensitive	Loose sand of desert dunes, flats, riverbanks, and washes. Prefers scant vegetation.	High potential to occur. This species in known from the vicinity and is likely to occur within the survey area.			
XANTUSIIDAE NIGHT LIZARDS							
Sandstone night lizard *Xantusia gracilis*	CSC		Anza-Borrego Desert State Park in sandstone habitats.	Not expected to occur. The survey area lacks the sandstone habitat for this species.			

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status: Federal/ State Status	Status: BLM Status	Habitat	Occurrence/Comments: R-1	IVW-1	IVW-2	IVW-2B
BIRDS (Nomenclature from American Ornithologists' Union 1998 and Unitt 1984)							
PELECANIDAE **PELICANS**							
American white pelican (nesting colony) *Pelecanus erythrorhynchos*	CSC		Lagoons, bays, estuaries, freshwater ponds; inland lakes during spring migration. Migrant and winter visitor.	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.			
ARDEIDAE **HERONS & BITTERNS**							
Great egret (rookery site) *Ardea alba*	*		Lagoons, bays, estuaries. Ponds and lakes in the coastal lowland. Winter visitor, uncommon in summer.	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.			
Great blue heron (rookery site) *Ardea herodias*	*		Bays, lagoons, ponds, lakes. Non-breeding year-round visitor, some localized breeding.	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.			
Green heron (breeding) *Butorides virescens*	*		Riparian woodland, lakes, ponds, brackish lagoons.	**Breeding pair and active nest observed within a concrete tank adjacent to the canal.**	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.		

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
Snowy egret (rookery site) *Egretta thula thula*	*		Coastal waters and freshwater ponds and lakes. Winter visitor, summer resident. Localized breeding colonies.	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.			
Western least bittern *Ixobrychus exilis hesperis*	CSC		Brackish and freshwater marshes in the coastal lowland. Rare summer resident, rare in winter.	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.			
Black-crowned night heron (rookery site) *Nycticorax nycticorax*	*		Lagoons, estuaries, bay shores, ponds, and lakes. Often roost in trees. Year-round visitor. Localized breeding.	Not expected to nest within the survey area. While the adjacent canals and agricultural land may provide foraging habitat for this species, there is no suitable nesting habitat for this species within the survey area.			
ACCIPITRIDAE HAWKS, KITES, & EAGLES							
Golden eagle (nesting and wintering) *Aquila chrysaetos canadensis*	CSC, BEPA		Require vast foraging areas in grassland, broken chaparral, or sage scrub. Nest in cliffs and boulders. Uncommon resident.	Not expected to nest or forage within the survey area.			
Ferruginous hawk (wintering) *Buteo regalis*	CSC		Require large foraging areas. Grasslands, agricultural fields. Uncommon winter resident.	Moderate potential to winter within the survey area The survey area proves suitable foraging habitat for this species, and it has potential to winter in the vicinity.			

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
FALCONIDAE **FALCONS & CARACARAS**							
Prairie falcon (nesting) *Falco mexicanus*	CSC		Grassland, agricultural fields, desert scrub. Uncommon winter resident. Rare breeding resident.	Not expected to nest within the survey area due to the lack of cliff faces and rocky habitat. Likely to forage or winter within the survey area.			
RALLIDAE **RAILS, GALLINULES, & COOTS**							
Yuma clapper rail *Rallus longirostris yumanensis*	FE, ST		Marshland vegetation, dense cattail stands, bulrush, reeds. Resident.	Not expected to occur. The survey area lacks the necessary marsh habitat for this species.			
LARIDAE **GULLS, TERNS, & SKIMMERS**							
Laughing gull (nesting colony) *Larus atricilla*	CSC		Salton Sea.	Not expected to occur. There is no suitable shoreline habitat for this species within the survey area.			
STRIGIDAE **TYPICAL OWLS**							
Long-eared owl (nesting) *Asio otus wilsonianus*	CSC		Riparian woodland, oak woodland, tamarisk woodland. Rare resident and winter visitor. Localized breeding.	Potential to forage within the survey area but not expected to breed.			
Western burrowing owl (burrow sites) *Athene cunicularia hypugaea*	CSC	Sensitive	Grassland, agricultural land, coastal dunes. Require rodent burrows. Declining resident.	**Observed. Two pairs and active burrows were observed along the berms and dry irrigation canals.**	Potential to occur. This species is known to occur in the vicinity of the survey area.		

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
TYRANNIDAE TYRANT FLYCATCHERS							
Southwest willow flycatcher *Empidonax traillii extimus*	FE/SE		Nesting restricted to willow thickets. Also occupies other woodlands. Rare spring and fall migrant. Extremely localized breeding.	May forage within the mesquite and tamarisk thickets adjacent to the survey area during migration. No suitable nesting habitat.	Not expected to nest or forage within the survey area.		
Vermilion flycatcher *Pyrocephalus rubinus flammeus*	CSC		Agricultural areas, parks, ponds, rivers. Rare fall and spring migrant, winter visitor, summer resident. Breeding rare.	Low potential to occur. The canal and mesquite thickets adjacent to the survey area may provide suitable habitat for this species.	Not expected to occur. There is no suitable habitat within the survey for this species.		
LANIIDAE SHRIKES							
Loggerhead shrike *Lanius ludovicianus*	CSC		Open foraging areas near scattered bushes and low trees.	**Observed within large shrubs and trees throughout the survey area.**			

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
MIMIDAE	**MOCKINGBIRDS & THRASHERS**						
Crissal thrasher *Toxostoma crissale*	CSC		Mesquite thickets in Borrego Springs area. Rare resident.	**Observed within the mesquite thickets adjacent to the survey area.**	High potential to occur. There is suitable habitat adjacent to R-1 and along desert washes in IVW-1 and IVW-2.		
LeConte's thrasher *Toxostoma lecontei lecontei*	CSC		Desert washes, creosote bush scrub. Uncommon resident.	High potential to occur. This species is known to occur in the vicinity and there is suitable habitat for this species throughout the survey area.		**Observed.**	High potential to occur. This species is known to occur in the vicinity and there is suitable habitat along the desert washes.

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
PARULIDAE WOOD WARBLERS							
Yellow warbler (nesting) *Dendroica petechia*	CSC		Breeding restricted to riparian woodland. Spring and fall migrant, localized summer resident, rare winter visitor.	High potential to occur. The mesquite thicket adjacent to the survey area provides suitable nesting habitat for this species.	Low potential to occur. The desert wash vegetation provides suitable habitat for foraging, but does not provide the density required by this species for nesting.		
Yellow-breasted chat (nesting) *Icteria virens auricollis*	CSC		Dense riparian woodland. Localized summer resident.	Not expected to occur. There is no suitable riparian woodland habitat within the survey for this species.			

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
MAMMALS (Nomenclature from Jones et al. 1997 and Hall 1981)							
PHYLLOSTOMIDAE NEW WORLD LEAF-NOSED BATS							
California leaf-nosed bat *Macrotus californicus*	CSC	Sensitive	Low deserts. Caves, mines, buildings. Colonial. Migrational. Mostly near Colorado River in California.	Low potential to occur. There is suitable foraging habitat for this species along the canal, but no suitable roosting habitat is present.	Low potential to occur. This species may forage along the washes, but no suitable roosting habitat is present.		
VESPERTILIONIDAE VESPER BATS							
Pallid bat *Antrozous pallidus*	CSC	Sensitive	Arid deserts and grasslands. Shallow caves, crevices, rock outcrops, buildings, tree cavities. Especially near water. Colonial. Audible echolocation signal.	Low potential to occur. There is suitable foraging habitat for this species along the canal, but no suitable roosting habitat is present.	Low potential to occur. This species may forage along the washes, but no suitable roosting habitat is present within the survey area. Swallows nesting under the nearby Interstate 8 bridge likely preclude bat species from inhabiting the bridge.		

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status: Federal/ State Status	Status: BLM Status	Habitat	Occurrence/Comments: R-1	IVW-1	IVW-2	IVW-2B
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	CSC		Cattail marshes along the Colorado River.	Not expected to occur. There is no suitable marsh vegetation within the survey area.			
MUSTELIDAE **WEASELS, OTTERS, & BADGERS**							
American badger *Taxidea taxus*	*		Grasslands, Sonoran desert scrub.	**Tracks observed immediately adjacent to the site.**	High potential to occur. Suitable den sites are present within all survey areas.		
CERVIDAE **DEER**							
Southern mule deer *Odocoileus hemionus fuliginata*	*		Many habitats.	Potential to forage in the survey area. Mule deer tracks were observed approximately 2 miles south of the survey area.			
FELIDAE **CATS**							
Mountain lion *Felis concolor*	*		Many habitats.	Potential to forage in the survey area. Mountain lion scat observed one mile west of the survey area, and mule deer sign has also been observed. The survey area lacks suitable den sites for breeding.			
BOVIDAE **CATTLE, ANTELOPE, GOATS, & SHEEP**							
Peninsular bighorn sheep *Ovis canadensis nelsoni*	FE, ST, *	Sensitive	Open, rocky habitat, sparse vegetated desert slopes, rocky ridges. San Bernardinos and desert ranges.	Not expected to occur. There is no suitable rocky habitat for this species within the survey area and the site does not provide a likely corridor for foraging between the peninsular ranges.			

(I) = Introduced species

STATUS CODES—see next page.

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Species	Status		Habitat	Occurrence/Comments			
	Federal/ State Status	BLM Status		R-1	IVW-1	IVW-2	IVW-2B
MOLOSSIDAE **FREE-TAILED BATS**							
Pocketed free-tailed bat *Nyctinomops femorosaccus*	CSC		Normally roost in crevice in rocks, slopes, cliffs. Lower elevations in San Diego and Imperial Counties. Colonial. Leave roosts well after dark.	Low potential to occur. There is suitable foraging habitat for this species along the canal, but no suitable roosting habitat is present.	Low potential to occur. This species may forage along the washes, but no suitable roosting habitat is present.		
HETEROMYIDAE **POCKET MICE & KANGAROO RATS**							
Jacumba little pocket mouse *Perognathus longimembris internationalis*	CSC		Desert riparian, desert scrub, desert wash, coastal scrub, and sagebrush.	Moderate potential to occur. This species is not known to occur in the project vicinity, but the entire survey area provides suitable habitat for this species.			
MURIDAE **OLD WORLD MICE & RATS (I)**							
Southern grasshopper mouse *Onychomys torridus ramona*	CSC		Alkali desert scrub & desert scrub preferred. Can also occur in succulent shrub, wash, & riparian areas; coastal sage scrub, mixed chaparral, sagebrush, low sage, and bitterbrush. Low to moderate shrub cover preferred.	Moderate potential to occur. There is suitable habitat for this species throughout the survey area.			

TABLE 4
SPECIAL STATUS WILDLIFE SPECIES OCCURRING OR WITH THE POTENTIAL TO OCCUR IN ISEC WEST SURVEY AREA (CONT.)

Listed/Proposed
FE = Listed as endangered by the federal government
FPE = Federally proposed endangered
FPT = Federally proposed threatened
FT = Listed as threatened by the federal government
SE = Listed as endangered by the state of California
ST = Listed as threatened by the state of California

Other
BEPA = Bald and Golden Eagle Protection Act
CSC = California Department of Fish and Game species of special concern
FC = Federal candidate for listing (taxa for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list as endangered or threatened; development and publication of proposed rules for these taxa are anticipated)
PSE = Proposed as endangered by the state of California
* = Taxa listed with an asterisk fall into one or more of the following categories:
- Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range
- Population(s) in California that may be peripheral to the major portion of a taxon's range but which are threatened with extirpation within California
- Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)

the spring with young hatching in late July and September. The diet of horned lizards typically consists of greater than 95 percent native ant species, mostly large harvester ants (*Pogonomyrmex* spp.).

The FTHL is found in the low deserts of southwestern Arizona, southeastern California, and adjacent portions of northwestern Sonora and northern Baja California, Mexico. In California, the FTHL is restricted to desert washes and desert flats in central Riverside, eastern San Diego, and Imperial counties. The majority of the habitat for the species is in Imperial County (Turner et al. 1980 as cited in ICC 2003).

The lizard is known to inhabit sand dunes, sheets, and hummocks, as well as gravelly washes. The species is thought to be most abundant in creosote bush scrub vegetation communities. However, this species may also be found in desert scrub, desert wash, succulent shrub, alkali scrub, and sparsely vegetated sandy flats. It is typically found in dry, hot areas of low elevation (less than 800 feet).

Human activities have resulted in the conversion of approximately 49 percent of the historic habitat of the FTHL (ICC 2003). The decline in the FTHL population is primarily due to impacts from utility lines, roads, geothermal development, sand and gravel mining, off-highway vehicle (OHV) recreation, waste disposal sites, military activities, pesticide use, and U.S. Border Patrol (USBP) activities (ICC 2003). The Argentine ant (*Linepithema humile*), an invasive species, was considered as a possible threat, but dismissed as such, since the climate at the dunes is too dry for Argentine ants to survive.

Local Populations

Flat-tailed Horned Lizard Interagency Coordinating Committee (ICC)'s *Flat-tailed Horned Lizard Rangewide Management Strategy* (2003) designated five Management Areas (MAs) to help focus conservation and management of FTHL key populations. The proposed Project falls partially within the Yuha Basin Management Area (see Attachment 1: Figure 6); while the proposed transmission line falls within the MA, the proposed solar field is adjacent to the MA.

The BLM recently estimated the population size on the three MAs by using capture-mark-recapture techniques incorporating detection probabilities (USFWS 2010f). Grant analyzed the BLM mark-recapture data from the Yuha Desert MA for 2002 and 2004. The Yuha Desert MA in 2002 was estimated to have 25,514 adult lizards (95 percent confidence interval = 12,761 to 38,970) and in 2004 was estimated to have 73,017 adult lizards (95-percent confidence interval = 4,837 to 163,635) (USFWS 2010f). Recent data indicate that a relatively large FTHL population remains in the Yuha Desert, and a recent report from USFWS (2010 as cited in USFWS 2010f) analyzing several years of occupancy and demographic data concluded that FTHL populations in the Yuha Desert

MA are not low and have not declined since 2007 and probably have not declined since 1997 (USFWS 2010f).

Occurrence

Five FTHLs were observed incidentally within the survey area during various biological surveys conducted in April, May, June, and July 2010. As seen in Attachment 1: Figure 5a, three individuals were observed within the abandoned agricultural fields, and two individuals were observed within the IVW-2 corridor (Photographs 5–7).

The proposed transmission corridor alternatives fall within the Yuha MA, and habitat for FTHL throughout much of the proposed corridors is consistent with habitat criteria for this species, including sparse desert scrub vegetation, soft, sandy soils, and the presence of harvester ants. Surface cobbling (mild desert pavement) is present in portions of the western half of the transmission corridors, and the density of FTHL in these areas may be lesser than in adjacent habitat with softer soils. This is reflected in the presence of horned lizard scat, which was observed regularly within the IVW-1 and IVW-2 corridors; scat was denser in the eastern half of the corridors where soil was softer and lacking cobbling.

Although FTHLs were observed within the abandoned agricultural lands of the proposed solar field, the abandoned fields provide low-quality habitat for this species. The soils throughout the solar field survey area are still very compact from previous farming practices with significantly fewer small mammal burrows present than in the adjacent creosote bush–white burr sage scrub vegetation. The dominant vegetative cover is relatively dense (50- to 80-percent cover in many areas) non-native invasive Sahara mustard, London rocket, nettle-leaf goosefoot, and Mediterranean grass. Harvester ants, horned lizards' primary food source, are present within the proposed solar field, but other typical habitat criteria for the FTHL including soft sandy soils and sparse vegetation, are largely lacking.

Yuma Clapper Rail (*Rallus longirostris yumanensis*)

Species

The Yuma clapper rail was federally listed as endangered March 11, 1967, under the Endangered Species Preservation Act of October 15, 1966, and state-listed as threatened February 22, 1978. The rail is also protected under the Migratory Bird Treaty Act and similar State laws. Critical habitat has not been established for this species.

PHOTOGRAPH 5
FTHL within an ISEC West Solar Field, North of Interstate 8

PHOTOGRAPH 6
FTHL within an ISEC West Solar Field, South of Interstate

PHOTOGRAPH 7
FTHL within IVW-1 Corridor

Habitat

This bird breeds in freshwater marshes along the Colorado River from Needles, California, to the Colorado River delta and at the Salton Sea. The Yuma clapper rail breeds in freshwater marshes and brackish waters and nests on firm, elevated ground, often under small bushes. It typically occupies emergent marsh vegetation, such as pickleweed and cordgrass, as well as mature stands of bulrush and cattail around the Salton Sea. High water levels may force them into willow and tamarisk stands. Tamarisk is also used after breeding and in winter at some sites. Nests are built between March and late July in clumps of living emergent vegetation over shallow water. Typical home ranges exceed 17 acres, increasing after the breeding season.

The diet of Yuma clapper rails is dominated by crayfish, with small fish, tadpoles, clams, and other aquatic invertebrates also utilized (Ohmart and Tomlinson 1977, Anderson and Ohmart 1985, Todd 1986, Eddleman 1989, Conway 1990 as cited in USFWS 2010b). The seasonal availability of crayfish in different habitat locations corresponds to shifts in habitat use by Yuma clapper rails (Bennett and Ohmart 1978, Eddleman 1989, Conway et al. 1993 as cited in USFWS 2010b).

Yuma clapper rails are active most of the daylight hours, with little to no activity after dark. Daily movement was lowest during the late breeding period (May-July) and highest during the late winter (January-February) (USFWS 2010b). Juvenile dispersal, movements by unpaired males during the breeding season and by both sexes post-breeding, and relocations in response to changing water levels are also documented (USFWS 2010b). Studies to determine migratory patterns showed a difficulty in locating the Yuma clapper rail during winter months without telemetry. While the Yuma clapper rail was previously thought to be migratory, experts have determined that they are a year-round residents, albeit discreet during winter months, of the lower Colorado River and Salton Sea (USFWS 2010b).

Habitat destruction and depredation by mammals and raptors have caused population declines. It is also possible that increased selenium concentrations from agricultural runoff are affecting reproduction (Unitt 2004; Zeiner 1989).

Occurrence

This species was not observed during surveys and is not expected to nest within the survey area. Morning surveys of the tamarisk and open water (Westside Main Canal) within the ISEC West were conducted in April (one general bird survey), May (one general bird survey), and June (three focused burrowing owl surveys). The nearest known location for this species is approximately 2 miles east of the survey area, adjacent to the New River (USFWS 2010b). There is no suitable marsh vegetation within the survey area to support this species and it is not expected to occur; therefore, the proposed project is not expected to impact this species.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Species

The southwestern willow flycatcher is federally listed as endangered, and all willow flycatchers in California, including the southwestern and two other subspecies (*E. t. brewsteri* and *E. t. adastus*) are state-listed as endangered. Critical habitat was designated for the southwestern willow flycatcher on October 19, 2005 in San Diego County, California and in Arizona (USFWS 2005). No critical habitat was designated within Imperial County, California.

Habitat

Willow flycatchers are in the Tyrannidae family and are one of ten species of *Empidonax* flycatchers in the United States. *Empidonax* flycatchers are difficult to distinguish visually but have distinctive songs. The southwestern willow flycatcher is generally paler than other willow flycatcher subspecies and also differs in morphology. Southwestern willow flycatchers are migrants, arriving on their breeding grounds in mid-May to early June (Garrett and Dunn 1981; Unitt 2004). The southwestern willow flycatcher migrates from its breeding range in August or September. Several subspecies of willow flycatcher migrate through southern California, with the most common migrant being *E. t. brewsteri* (Unitt 2004). It is virtually impossible to differentiate between subspecies of willow flycatcher during migration. The southwestern willow flycatcher requires riparian habitat with willow (*Salix* spp.) thickets (Grinnell and Miller 1944). Understory species include mule fat (*Baccharis* sp.) and arrow weed (*Pluchea* sp.). Southwestern willow flycatchers also nest in areas with tamarisk (*Tamarix* spp.) and Russian olive (*Eleagnus angustifolia*) in areas where these species have replaced the native willow. Surface water is required at nesting sites. Estimated nesting habitat patch size varies from 0.2 to 1.5 acres. Nests are constructed in densely vegetated thickets with trees between 13 and 23 feet in height (Tibbitts et al. 1994; USFWS 1993).

Threats in the United States include loss of riparian habitat due to water diversion, flood control, urbanization, grazing, and invasion of non-native species. Parasitism by brown-headed cowbirds has been a significant factor in the decline of this species in California and Arizona and elsewhere (Sedgwick 2000). Tropical deforestation may also contribute to the decline of this species, but the effects are not known (USFWS 1993).

The southwestern willow flycatcher breeds in southern California, Arizona, New Mexico, southern Nevada, southern Utah, western Texas, northwestern Mexico, and possibly southwestern Colorado and winters in Mexico, Central America, and possibly northern South America (USFWS 1993). Historically common in all the lower-elevation riparian areas of southern California, the southwestern willow flycatcher was found in the Los Angeles Basin, San Bernardino/Riverside County area, and San Diego County (Unitt 2004). Southwestern willow flycatcher persists in the Colorado, Owens, Kern, Mojave,

Santa Ana, Santa Margarita, San Luis Rey, Santa Clara, Santa Ynez, Sweetwater, and San Dieguito river systems and in San Timeteo, Pilgrim, and Temecula Creeks.

Occurrence

Southwestern willow flycatchers are not expected to nest within the survey area due to lack of suitable habitat.

During focused burrowing owl surveys in early June 2010, at least five willow flycatchers were observed foraging in a wind-row composed of mesquite and tamarisk trees along the southeastern boundary of R-1. In order to determine subspecies and migratory status of this species, a USFWS protocol survey for southwestern willow flycatcher was initiated.

Four focused surveys for southwestern willow flycatcher took place June 13 and 23, and July 7 and 13, 2010. On June 13, no willow flycatchers were observed within the ISEC West survey area. One willow flycatcher was observed approximately 6 miles south of the project, adjacent to the survey area for the ISEC South project (RECON 2010). Prior to this observation, a recording of the southwestern willow flycatcher vocalization was played in order to elicit a response. The individual willow flycatcher did not respond to the vocalization for the southwestern subspecies, but did respond to the vocalization of the northern subspecies *E. t. brewsteri.* During the subsequent surveys for both the ISEC South and West projects in late June and July 2010, no willow flycatchers were detected.

Based on these data, the willow flycatchers observed in early June are likely *E. t. brewsteri,* utilizing the mesquite vegetation for foraging during migration. Based on all available data of southwestern willow flycatcher habits, known populations, and habitat requirements, no willow flycatchers, including the southwestern subspecies, are expected to nest within the survey area, but may forage within the mesquite and arrow weed vegetation adjacent to the Westside Main Canal during migration.

Least Bell's Vireo (*Vireo bellii pusillus*)

Species

Least Bell's vireo was federally listed as an endangered species on May 2, 1986, and the USFWS designated critical habitat for the least Bell's vireo in 1994 (USFWS 1994). A draft recovery plan for the least Bell's vireo was developed in 1998 (USFWS 1998).

Least Bell's vireo is a small, nondescript vireo, with generally gray plumage, rounded wings with pale white wing bars and narrow white eye rings. Juveniles are distinguished from adults by whiter plumage and more distinct wing bars. This species has a distinctive song and is most easily located through its vocalizations. Least Bell's vireo is

a migratory songbird that winters in Baja California, Mexico, arriving in California from mid-March to April and departing for Baja California again in September (Brown 1993). Breeding season generally ranges from March through July. Males establish breeding territories that range in size from 0.5 to 4 acres (RECON 1988). Nests are commonly located on branches approximately 1.5 to 5 feet above the ground (Brown 1993). Most pairs produce only one brood per season, but pairs have been documented to produce up to four in one season (Franzreb 1989). Least Bell's vireo is parasitized throughout its breeding range by brown-headed cowbirds (*Molothrus ater*), which are the cause of a substantial proportion of nest failures (Brown 1993).

Habitat

These birds are restricted to dense riparian habitats that usually have a canopy of willows (*Salix* spp.) and an understory comprised of mule fat (*Baccharis* sp.), wild rose (*Rosa californica*), and other riparian species (Franzreb 1989). Least Bell's vireos select riparian areas with dense shrub cover and a well-developed understory for nesting. Degradation of riparian habitat due to invasion by exotic plants, grazing practices, and other causes have decreased the amount of available habitat for least Bell's vireo.

Least Bell's vireo was historically common, ranging from near Red Bluff in Tehama County south through the Central Valley and the foothills of the Sierra Nevada. In the coastal region this bird ranged from Santa Clara County south to San Fernando in Baja California. Desert sites include Owens Valley, Death Valley, and oases in the Mojave Desert (Franzreb 1989).

After 1940, extensive habitat loss and nest parasitism by the brown-headed cowbird caused the population to decline and this species has been extirpated from many historic areas, including the Central Valley (Franzreb 1989). It has been estimated that 95-97 percent of the riparian habitat within the floodplain of southern California has been lost due to flood control measures and development (Faber et al. 1989). In 1986 when least Bell's vireo was listed as endangered, the total population in California was estimated at 300 pairs, with the majority of the birds located in San Diego County. Following the listing, intensive brown-headed cowbird trapping programs were initiated and the population began to increase, showing exponential growth in some locations such as the Santa Margarita River, Tijuana River, and Prado Basin and Hidden Valley Drain on the Santa Ana River.

Currently, least Bell's vireo is known from coastal Santa Barbara County south into Baja California. Least Bell's vireo is also present in the desert of San Diego County at Anza Borrego State Park, where 117 territories were recorded in 2002 (USFWS 2006). Large populations are located on the Santa Margarita River in San Diego County and the Santa Ana River in Riverside and San Bernadino Counties (USFWS 2006).

Occurrence

No least Bell's vireo was observed within the survey area during various spring and summer surveys conducted in 2010. There are no large riparian corridors that provide suitable habitat for this species to nest within the survey area, and the nearest reported location of this species is approximately 25 miles to the northwest (State of California 2010b). This species is not expected to use the survey area for nesting or foraging; and will therefore not be impacted by the proposed project.

Peninsular Bighorn Sheep (*Ovis canadensis nelsoni*)

Species

Peninsular bighorn sheep (*Ovis canadensis nelsoni* [=*cremnobates*]) (distinct vertebrate population segment) was federally listed endangered on March 18, 1998, and state-listed threatened on June 27, 1971 (USFWS 2001). The Peninsular bighorn sheep is similar in appearance to other desert bighorn sheep. The coat is pale brown, and the permanent horns, which become rough and scarred with age, vary in color from yellowish brown to dark brown. The horns are massive and coiled in males; in females, they are smaller and not coiled. In comparison to other desert bighorn sheep, the Peninsular bighorn sheep is generally described as having paler coloration and having horns with very heavy bases (Cowan 1940). Previously, this subspecies was considered to be distinct from the other subspecies of *Ovis canadensis.* However, new DNA analysis has concluded that the Peninsular bighorn sheep are synonymous with Nelson's bighorn sheep (*Ovis canadensis nelsoni*); *O. c. cremnobates* was placed into the same subspecies as Nelson's bighorn sheep. The distinct vertebrate population segment that occurs within the Peninsular Ranges is the population of this subspecies that is listed as federally endangered (USFWS 2000). Critical habitat was designed in 2009 and includes portions of western Imperial County, approximately 20 miles west of the survey area.

Habitat

Peninsular bighorn sheep occur on steep, open slopes, canyons, and washes in hot and dry desert regions where the land is rough, rocky, and sparsely vegetated. Open terrain with good visibility is critical, because bighorn primarily rely on their sense of sight to detect predators (USFWS 2001). Most Peninsular bighorn sheep live between 300 and 4,000 feet in elevation, where average annual precipitation is less than four inches and daily high temperatures average 104 degrees Fahrenheit in the summer. Caves and other forms of shelter (e.g., rock outcrops) are used during inclement weather and for shade during the hotter months. In the Peninsular Ranges, bighorn sheep use a wide variety of plant types as food sources, including shrubs, forbs, cacti, and grasses (USFWS 2001). Although steep escape route terrain is closely associated with bighorn

sheep, low rolling and flat terrain including foothills and washes provide an alternative source of high quality browse forage during times when resources become limited (USFWS 2001). Lambing areas are associated with ridge benches or canyon rims adjacent to steep slopes or escarpments. Alluvial fans (sloping deposits of gravel, sand, clay, and other sediments that spread fanlike at the base of canyons and washes) are also used for breeding, feeding, and movement (USFWS 2001).

Historically, bighorn sheep have been documented in the Peninsular Ranges since early explorers such as Anza observed them in the 1700s (Bolton 1930, as cited in USFWS 2001). The distribution of Peninsular bighorn sheep has become more fragmented in the recent past, possibly due to the construction of roads that bisect ancestral bighorn trails and restrict bighorn movement (USFWS 2001). Bighorn sheep exhibit a natural patchy distribution as a result of natural breaks in mountainous habitat (Schwartz et al. 1986 and Bleich et al. 1990a, 1996, as cited in USFWS 2001). Currently, the Peninsular bighorn is distributed in fragmented populations from the Jacumba Mountains in San Diego County near the U.S.–Mexico border to the San Jacinto Mountains in Riverside County (USFWS 2001).

Occurrence

Prior to 2009, the nearest recorded location for this species was approximately 16.7 miles west of the survey area, in the rocky hills southwest of Ocotillo, California (State of California 2010b). In March 2009, biologists observed a small herd (five ewes and/or juveniles) on the Imperial Valley Solar Project, located northwest of the proposed ISEC West solar field (BLM 2010). This sighting was approximately 4 miles east of designated critical habitat, and was considered an unusual occurrence as the habitat on the Imperial Valley Solar project site is not optimal for the sheep due to lack of cover, escape routes, human recreational OHV use, and distance from typical habitat (BLM 2010).

The survey area does not contain the steep, rocky terrain that typically provides cover and habitat for the Peninsular bighorn sheep. The Coyote, In-Ko-Pah, and Jacumba mountains, peninsular ranges that provide suitable year-round habitat for this species, are located 7 to 10 miles from the proposed project. The project is situated adjacent to the large agricultural complex that surrounds El Centro and does not function as a movement corridor for Peninsular bighorn sheep between the peninsular mountain ranges in the Imperial Valley. While it is possible that the Peninsular bighorn sheep may on the rare occasion move into the survey area for foraging, the site is too far from shelter and cover to be a regular source for foraging or water (USFWS 2000). The proximity of the action area to continuous agricultural activities also reduces the likelihood of use by Peninsular bighorn sheep, who are sensitive to human activity and disturbance (USFWS 2010f).

Peninsular bighorn sheep were not detected in the survey area during various biological surveys conducted in April, May, June, and July 2010. Given the distance from suitable

rocky terrain; sparse vegetation within the survey area; lack of detection within the survey area; and the unlikelihood of the survey area to function as a corridor for this species, Peninsular bighorn sheep are not likely to occur within the survey area. Therefore, Peninsular bighorn sheep are not expected to be impacted by the proposed project.

3.4.2.2 State-listed Species

Four state-listed wildlife species were evaluated based on their known occurrences in Imperial County: greater sandhill crane (*Grus canadensis tabida*), Yuma clapper rail, barefoot banded gecko (*Coleonyx switaki*), and Peninsular bighorn sheep (see Attachment 5). Of these species the Yuma clapper rail and Peninsular bighorn sheep are federally listed and discussed above. The mountain lion and barefoot banded gecko species are discussed below.

Greater Sandhill Crane (*Grus canadensis tabida*)

Species

The greater sandhill crane is state-listed as threatened and is protected under the federal MBTA and similar State legal protections. This species is known to winter in Imperial County California (Zeiner et al. 1989).

Habitat

Both greater (*Grus canadensis tabida*) and lesser (*G. c. canadensis*) sandhill cranes occur in California. Historically, *G. c. tabida* was a fairly common breeder on northeastern plateau (Zeiner et al. 1989). It is now reduced greatly in numbers, and breeds only in Siskiyou, Modoc, Lassen, Sierra Valley, Plumas and Sierra counties. (Zeiner et al. 1989). In summer, this race occurs in and near wet meadow, shallow lacustrine, and fresh emergent wetland habitats. It winters primarily in the Sacramento and San Joaquin valleys from Tehama County south to Kings County, where it frequents annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. It prefers relatively treeless plains. The migratory subspecies *G. c. canadensis* winters in similar habitats in the San Joaquin and Imperial valleys (Zeiner et al. 1989), and to a lesser extent in the Sacramento Valley. In southern California, it concentrates on the Carrizo Plain, San Luis Obispo County, with smaller flocks near Brawley, Imperial County, and Blythe, Riverside County (Zeiner et al. 1989). The latter two flocks may be partly, or largely, *G. c. tabida*, which formerly wintered more commonly in southern California, but which has declined greatly there and throughout its range. Outside of known wintering grounds, *G. c. tabida* is extremely rare except that migrates over much of interior California. A few coastal sightings of greater sandhill crane exist from Marin County southward, but no records from offshore islands. When foraging, the greater sandhill crane prefers open shortgrass plains, grain fields, and

open wetlands (Zeiner et al. 1989), but it may also feed on dry plains far from water. The greater sandhill crane feeds on grasses, forbs, especially cereal crops (newly planted or harvested); and also uses it's long bill to probe in soil for roots, tubers, seeds, grains, earthworms, and insects. It will also feed on larger prey, such as mice, small birds, snakes, frogs, and crayfish.

Occurrence

The greater sandhill crane is likely to forage within the arrow weed thicket along the Westside Canal and the adjacent agricultural fields east of the Westside Canal (outside of the survey area) during winter, but this species is not expected to breed in the survey area.

Barefoot Banded Gecko (*Coleonyx switaki*)

Species

The barefoot banded gecko is state-listed as threatened. Its known range occurs along the eastern face of the Peninsular Ranges in San Diego and Imperial Counties, and little information is known about its extended range or abundance.

Habitat

Habitat for the barefoot banded gecko is found in arid rocky areas on flatlands, canyons, and thornscrub, especially where there are large boulders and rock outcrops, and where vegetation is sparse (Murphy 1974). In California, inhabits the arid desert slopes of the eastern side of the Peninsular Ranges from near Borrego Springs south to the Baja California border, and may occur at elevations from near sea level to over 2,000 ft. (700 m). An isolated population is known to occur in the Coyote Mountains of Imperial County. It ranges farther south in Baja California along the eastern edge of the mountains to near Santa Rosalia (Murphy 1974).

The barefoot banded gecko is insectivorous. Most likely, the breeding season lasts from spring to summer, May to July. Females lay one or two eggs, roughly 3 weeks after mating, and may lay eggs several times each season. Eggs hatch after around 2 months, in late summer to early fall (Murphy 1974).

Occurrence

No barefoot banded geckos are expected to occur within the project area based on a lack of suitable habitat in the form of large boulders and rocky outcrops.

3.4.2.3 BLM Sensitive Wildlife

Six BLM sensitive wildlife species were evaluated based on their presence on the BLM sensitive list within the El Centro Field Office's jurisdiction: Colorado Desert fringe-toed lizard (*Uma notata notata*), FTHL, barefoot banded gecko, western burrowing owl, California leaf-nosed bat (*Macrotus californicus*), and pallid bat (*Antrozous pallidus*). The FTHL, barefoot banded gecko, and golden eagle are also federally and state-listed species and discussed above.

Colorado Desert Fringe-toed Lizard (*Uma notata notata)*

Species

The Colorado Desert fringe-toed lizard is a CDFG Species of Special Concern and a BLM sensitive species. They are primarily insectivores, but also take plant material. Their diet consists of ants, beetles, antlion larvae, hemipterans, grasshoppers, and caterpillars. Plant foods include buds, flowers, leaves, and seeds. Conspecifics and other lizards are also eaten occasionally. Sight is most frequently used to find food on the surface of sand. Buried fringe-toed lizards also use hearing to detect prey on the sand surface, or to find buried prey when above ground (Zeiner et al. 1988).

Fringe-toed lizards usually seek refuge from enemies by burrowing in the sand ("sand swimming") within 5 to 6 centimeters (2 to 2.4 inches) of the surface. They are usually buried on the lee sides of dunes and hummocks to prevent excavation by wind. Rodent burrows and the bases of shrubs are also used for cover and thermoregulation. Lizards usually hibernate in sand 30 centimeters (12 inches) deep, but juveniles and subadults may be found closer to the surface (Zeiner et al. 1988).

Habitat

The Colorado Desert fringe-toed lizard is found in the Colorado and Sonoran deserts south of the Salton Sea in Imperial and San Diego Counties. Its elevational range extends from sea level up to 180 meters (590 feet) (Jennings and Hayes 1994). The Colorado Desert fringe-toed lizard is restricted to fine, loose, wind-blown sand dunes, dry lakebeds, sandy beaches or riverbanks, desert washes, and sparse desert scrub (Zeiner et al. 1988).

Occurrence

This species has a high potential to occur within the survey area, but none were observed during surveys. This species is known to occur approximately 2 miles west of the survey area (State of California 2010), and the creosote bush–white burr sage scrub vegetation provides suitable habitat.

Burrowing Owl (*Athene cunicularia*)

Species

The burrowing owl is a California Species of Special Concern and a BLM sensitive species. It is protected by the MBTA and California Fish & Game Code §§ 3503, 3503.5, 3513. It is nocturnal and perches during daylight at the entrance to its burrow or on low posts. Nesting occurs from March through August. Burrowing owls form a pair-bond for more than 1 year and exhibit high site fidelity, reusing the same burrow year after year (Haug et al. 1993). The female remains inside the burrow during most of the egg laying and incubation period and is fed by the male throughout brooding. Burrowing owls are opportunistic feeders, consuming a diet that includes arthropods, small mammals, and birds, and occasionally amphibians and reptiles (Haug et al. 1993). Urbanization has greatly reduced the amount of suitable habitat for this species. Other contributions to the decline of this species include the poisoning of squirrels and prairie dogs, and collisions with automobiles. A survey effort carried out between 1991 and 1993 indicated that major population densities remain in the Central and Imperial valleys (DeSante et al. 1996), where this species is a year-round resident in Imperial County.

Habitat

Burrowing owl is primarily restricted to the western United States and Mexico. Habitat for the burrowing owl includes dry, open, short-grass areas often associated with burrowing mammals (Haug et al. 1993). In Imperial County it can be found in desert scrub, grassland, and agricultural areas, where it digs its own or occupies existing burrows.

Occurrence

Two active burrowing owl burrows were observed within the survey area, within the abandoned agricultural fields during 2010 focused breeding season surveys (RECON 2010b). Each active burrow, found in the berms adjacent to the concrete irrigation channels, hosted a pair of burrowing owls. No eggs or fledglings were observed within the burrows. No burrowing owls were observed within the transmission corridors during the surveys.

California Leaf-nosed Bat (*Macrotus californicus*)

Species

The California leaf-nosed bat is a Species of Special Concern and a BLM sensitive species. This bat is found primarily in desert areas of the southwestern United States, and ranges through Imperial County and the western parts of Riverside and San Diego Counties in California.

Habitat

It is commonly found in desert habitats that include riparian, wash, scrub, succulent scrub, alkali scrub, and palm oasis. The California leaf-nosed bat is non-migratory and active year-round, requiring rocky, rugged terrain, caves, or mine shafts for roosting. These gregarious bats have been observed in groups of up to 500, with both sexes roosting together during the non-breeding season and separately during spring and summer. It forages over flats and washes within 1 mile of its roost, and is a "gleaning" insectivore which captures prey such as crickets, grasshoppers, beetles, and sphinx moths straight from the ground or foliage rather than in flight (BCI 2010). It typically hunts within a few feet of the ground using its superior eyesight to search for insects. Population declines are generally attributable to loss of roost sites resulting from human intrusion and physical alteration (Zeiner et al. 1990).

Occurrence

The desert washes, thickets, agricultural fields and irrigation channels offer foraging opportunities for this species. The nearest reported location for the California leaf-nosed bat is approximately 26 miles northwest of the proposed project (State of California 2010b). No known roosts occur in the survey area, and there is no suitable roosting habitat within the survey area.

Pallid Bat (*Antrozous pallidus*)

Species

Pallid bat is a Species of Special Concern and a BLM sensitive species. It is a locally common yearlong resident of low elevations throughout most of California.

Habitat

This bat occupies a variety of habitats including grasslands, shrublands, woodlands, and forests at elevations ranging from sea level up through mixed conifer forests. The species occurs most commonly in open, dry habitats and prefers rocky areas for roosting. Pallid bats are social, commonly roosting in multi-species groups of 20 or more. The day roosts, such as caves, crevices, and mines, must protect the bats from high temperatures. The bats forage low over open ground, and consume large, hard-shelled prey items such as beetles, grasshoppers, cicadas, spiders, scorpions, and Jerusalem crickets. Pallid bats are very sensitive to disturbance of the roosting sites as these roosts are crucial for metabolic economy and juvenile development. Population declines are generally attributable to loss of roost sites resulting from human intrusion and physical alteration (Zeiner et al. 1990).

Occurrence

The entire survey area offers foraging opportunities for this species. The nearest reported location for the pallid bat is approximately 26 miles west of the proposed project (State of California 2010b). Roosts are not known to occur in the survey area, and there is no suitable roosting habitat within the survey area.

3.4.2.4 California Species of Special Concern and Fully Protected Species

Three species that are classified as CDFG Species of Special Concern were observed within the survey area, loggerhead shrike, crissal thrasher (*Toxostoma crissale*), and LeConte's thrasher (*T. lecontei lecontei*). Golden eagle (*Aquila chrysaetos*), a CDFG Fully Protected Species, and protected under the Bald and Golden Eagle Protection Action, MBTA, and Fish & Game Code sections 3503, 3503.5, and 3513, is also evaluated. These species are discussed below.

Golden Eagle (*Aquila chrysaetos*)

Species

This eagle occurs throughout the United States and is a rare resident in San Diego County and Imperial Counties (Unitt 2004; Zeiner 1989).

Habitat

Golden eagles nest on cliffs of all heights and in large trees in open areas, and uses rugged, open habitats with canyons and escarpments used most frequently for nesting (Zeiner 1989). Alternative nest sites are maintained, and old nests are reused. Golden eagles build large platform nests, often 3 meters (10 feet) across and 1 meter (3 feet) high, of sticks, twigs, and greenery.

This species forages over large areas of grassland, desert, and open chaparral or sage scrub where they primarily prey upon rabbits and ground squirrels. Golden Eagles forage close to and far from their nests, i.e. < 6 kilometers from the center of their territories, but have been observed to move 9 kilometers from the center of their territories in favorable habitat (McGrady et al. 2002 as cited in USFWS 2010c). These distances may be greater in xeric habitats (USFWS 2010c). Several golden eagle territories have been eliminated by urbanization, agricultural development, and other human disturbances (Unitt 2004; Zeiner 1989).

Occurrence

The golden eagle is not expected to occur within or adjacent to the survey area. Golden eagles have not been recorded within the project vicinity (LaPre 2010; State of California

2010) and were not observed during various spring and summer 2010 biological surveys for the proposed project. No suitable nesting habitat is present within the survey area; therefore, golden eagles are not expected to nest within the survey area.

The nearest known golden eagle population is approximately 10 miles northwest of the survey area, in the Coyote Mountains (LaPre 2010). The In-ko-Pah and Jacumba mountains, approximately 10 miles west of the proposed project, also provide suitable habitat for this species. Due to the distance from known territories, golden eagles are not expected to forage within or adjacent to the survey area.

Loggerhead Shrike (*Lanius ludovicianus*)

Species

The loggerhead shrike is a CDFG Species of Special Concern and is a year-round resident in Imperial County.

Habitat

This species inhabits most of the continental United States and Mexico and is a year-round resident of southern California. The loggerhead shrike prefers open habitat with perches for hunting and fairly dense shrubs for nesting (Yosef 1996). In southern California, loggerhead shrikes inhabit grasslands, agricultural fields, chaparral, and desert scrub (Unitt 1984). Their breeding season is from March to August. Loggerhead shrikes are highly territorial and usually live in pairs in permanent territories (Yosef 1996). Loggerhead shrikes feed on small reptiles, mammals, amphibians, and insects that they often impale on sticks or thorns before eating. Loggerhead shrike populations are declining, likely due to urbanization and loss of habitat and, to a lesser degree, pesticide use (Yosef 1996).

Occurrence

Loggerhead shrikes were observed in mesquite trees within all of the project component survey areas. This species is likely to nest within the mesquite trees in the desert wash, mesquite thicket, or tamarisk thicket within and adjacent to the survey area.

Crissal Thrasher (*Toxostoma crissale*)

Species

The crissal thrasher is a CDFG Species of Special Concern and is a year-round resident in Imperial County.

Habitat

A resident of southeastern deserts, still fairly common in Colorado River Valley, but local and uncommon elsewhere, this species occupies dense thickets of shrubs or low trees in desert riparian and desert wash habitats. In eastern Mojave Desert of San Bernardino and southeastern Inyo counties, it also occurs in dense sagebrush and other shrubs in washes within juniper and pinyon–juniper habitats, up to 1800 m (5900 ft). It is also resident in Imperial, Coachella, and Borrego valleys, but numbers have declined markedly in recent decades (Grinnell and Miller 1944; Remsen 1978; Garrett and Dunn 1981 as cited in Zeiner 1989).

This species forages mostly on ground, especially between and under shrubs. It uses its bill to dig in friable soil and to probe in litter. Its diet is poorly known, but includes insects, other invertebrates, berries, and other small fruits, seeds, and occasionally small lizards (Bent 1948 at cited in Zeiner 1989). Breeding season for the crissal thrasher lasts from February into June with a peak in March and April.

The crissal thrasher numbers have been reduced greatly by removal of mesquite brushland for agricultural development and by introduction of tamarisk. Off-road vehicle activity also may degrade habitat and disturb thrashers (Zeiner 1989).

Occurrence

This species was observed within the mesquite thickets adjacent to the ISEC West solar field.

Le Conte's Thrasher (*Toxostoma lecontei lecontei*)

Species

The Le Conte's thrasher is a CDFG Species of Special Concern and a year-round resident in Imperial County.

Habitat

Le Conte's thrasher is an uncommon to rare, local resident in southern California deserts from southern Mono County south to the Mexican border, and in western and southern San Joaquin Valley. It occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats. Le Conte's thrasher may also occur in Joshua tree habitat with scattered shrubs (Grinnell and Miller 1944; McCaskie et al. 1979, 1988; Garrett and Dunn 1981 as cited in Zeiner 1989).

This species feeds on a variety of insects and other terrestrial arthropods; occasionally on seeds, small lizards, other small vertebrates (Bent 1948; Sheppard 1970 as cited in Zeiner 1989). It primarily forages on ground by probing and digging in soil and litter with

bill. The Le Conte's thrasher is a year-round, non-migratory species that breeds from late January into early June, with a peak from mid-March to mid-April.

Occurrence

This species was observed within desert wash vegetation along the transmission corridors.

3.4.3 Riparian Habitat or Sensitive Natural Communities

Sensitive vegetation communities are those that are considered rare or sensitive based on the level of disturbance or habitat conversion within their range. Vegetation communities associated with wetland or riparian habitats such as the desert wash and mesquite thickets are considered sensitive by CDFG (State of California 2010). In addition, the creosote bush-white burr sage scrub within the survey area is considered occupied by the FTHL, and is therefore protected under CEQA guidelines.

3.4.4 Jurisdictional Waters

A jurisdictional delineation was conducted to determine the extent of ACOE, CDFG, and RWQCB resources within the survey area. The delineation results for these resources are discussed below, detailed in Table 5, and shown in Attachment 1: Figures 7a–b.

TABLE 5
JURISDICTIONAL RESOURCES WITHIN ISEC WEST PROJECT SURVEY AREA

Jurisdictional Resource	R-1 (acres)	IVW-1 (acres)	IVW-2 (acres)	IVW-2A (acres)	IVW-2B (acres)	Total (acres)
ACOE						
Non-wetland Waters of the US	0.1	31.2	8.1	0.2	0.1	39.7
ACOE Total	***0.1***	***31.2***	***8.1***	***0.2***	***0.1***	***39.7***
CDFG						
Riparian	5.9	26.3	6.5	-	-	38.7
Streambed	0.9	4.9	1.6	0.2	0.1	7.7
CDFG Total	***6.8***	***31.2***	***8.1***	***0.2***	***0.1***	***46.4***

3.4.4.1 ACOE Jurisdictional Waters

No ACOE wetland areas have been identified within the Imperial Solar Energy Center West survey area. All ACOE jurisdictional areas delineated are preliminarily considered non-wetland waters made up of ephemeral drainages. Some features occurring within the survey area would be exempt (farm ditches) or potentially exempt (small washes) from ACOE jurisdiction.

Non-wetland Waters of the U.S.

Non-wetland waters within the Imperial Solar Energy Center West project survey area include a number of ephemeral drainages that range in size from single-thread channels to broad compound channel areas of the Yuha Wash system (see Figure 3). The smaller and narrower drainages tended to occur in creosote bush scrub vegetation of varying density and function as tributaries to the larger washes. The larger wash areas associated with the Yuha Wash floodplain often supported xeroriparian desert wash scrub along the banks and mid-channel bars of the active floodplain. These observations are considered preliminary. A final jurisdictional delineation will be submitted to the ACOE for review and acceptance.

Exemptions from ACOE Jurisdiction

Drainage features within the project survey area that would be considered exempt from ACOE jurisdiction include abandoned farm drains. The inactive farm fields where the photovoltaic solar field would be located contain a series of abandoned ditches and drains that used to convey irrigation water to the crops once planted in these fields. These drainage features now consist of mostly concrete-lined and some earthen ditches that have deteriorated and become filled in with soil. These old farm drains/ditches are not considered ACOE jurisdictional waters, because 1) they do not convey natural flows, 2) were excavated in upland areas, 3) are mostly concrete-lined, and 4) do not function as jurisdictional waters. An approved jurisdictional determination form and supplemental information has been submitted to the ACOE that addresses the farm drains and lack of a significant nexus to any traditional navigable waters.

One discontinuous small wash was identified within the abandoned farm fields of the proposed PV facility site south of Interstate 8 (see Figure 7a). Flows from an off-site drainage enter the site through a breech in an existing berm and drain across the old farm field towards the east. A few discontinuous single-thread channels have formed that do not appear to exit the farm fields, and flows may only connect to any other off-site jurisdictional waters downstream during a 100-year storm event. This small wash is potentially exempt from ACOE jurisdiction. An approved jurisdictional determination form and supplemental information that demonstrate that there is no nexus to a traditional navigable water have been submitted to the ACOE to verify whether this drainage is not within ACOE jurisdiction.

3.4.4.2 CDFG / RWQCB Jurisdictional Waters

CDFG/RWQCB jurisdiction waters of the State include ACOE non-wetland jurisdictional waters (streambed) and any xeroriparian habitat that occurs outside of the limits of the ACOE jurisdiction. The xeroriparian areas, especially in the larger washes of the Yuha Wash drainage system, support desert wash vegetation dominated by smoke tree, tamarisk, and mesquite stands of varying density and distribution.

3.4.5 Habitat Connectivity and Wildlife Corridors

Wildlife movement corridors and habitat linkages are areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Corridors are generally local pathways connecting short distances usually covering one or two main types of vegetation communities. Linkages are landscape level connections between very large core areas and generally span several thousand feet and cover multiple habitat types. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors and linkages for wildlife travel. The habitat connectivity provided by corridors and linkages is important in providing access to mates, food, and water, allowing the dispersal of individuals away from high population density areas, and facilitating the exchange of genetic traits between populations (Beier and Loe 1992).

Both avian and terrestrial wildlife species are able to move freely throughout the survey area and are not restricted to a specific corridor or linkage. A barbed-wire fence is in place along the north and south borders of Interstate 8, but this fence would not likely inhibit the small to medium sized wildlife species in the vicinity. In addition, the Interstate 8 bridge over the canal provides a large underpass for movement to the north or south.

3.4.6 California Desert Conservation Area

As seen on Figure 6, the proposed transmission line survey area falls entirely within the Yuha Basin ACEC of the CDCA, and is within the “Utility Corridor N”, as designated by the CDCA. The proposed ISEC West solar field is outside of and immediately adjacent to the designated ACEC land.

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4.0 Proposed Project Impact

Approximately 1,071.5 acres of the 1,128-acre ISEC West solar field are expected to be impacted by the Preferred Alternative.

There are three transmission alternatives, the Preferred Alternative, Alternative A, and Alternative B. All transmission line alternatives would start at the Substation and run northwest to connect to the solar field.

A fourth project Alternative, Alternative C, reflects a 10.3-acre reduction in the size of the solar field within the abandoned agricultural fields.

The proposed impacts are summarized below and the proposed impacts impact to vegetation communities within the survey area for each Alternative is detailed in Table 6 and shown on Attachment 1: Figures 8a–b.

4.1 Impact to Special Status Species

For purposes of this report, the proposed project would have a significant impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the CDFG or USFWS.

4.1.1 Special Status and Priority Plants

Thurber's pilostyles was observed on 49 Emory's indigo bush shrubs located within and adjacent to a desert wash in the southern half of the proposed solar field. These shrubs, and the associated Thurber's pilostyles plants, are expected to be impacted by construction of the proposed project. This impact would be considered potentially significant, and mitigation would be required to reduce the impact to a level of less than significant.

4.1.2 Sensitive Wildlife

4.1.2.1 Flat-tailed Horned Lizard

4.1.2.1.1 Construction Impacts

Direct Impacts

Direct impacts to FTHL may occur during construction of the proposed solar field and associated transmission line. Construction activities such as the movement of construction vehicles or heavy equipment and the installation of transmission towers or

TABLE 6
VEGETATION COMMUNITY IMPACTS FOR ISEC WEST PROJECT

Vegetation Communities/ Land Cover Types	Preferred Alternative			Alternative A			Alternative B			Alternative C		
	Solar Field Impacts (acres)	Proposed Transmission Line (IVW-2 + IVW-2B) Impacts (acres)	Total Impacts (acres)	Solar Field Impacts (acres)	Alternative A Transmission Line (IVW-2 + IVW-2A) Impacts (acres)	Total Impacts (acres)	Solar Field Impacts (acres)	Alternative B Transmission Line (IVW-1) Impacts (acres)	Total Impacts (acres)	Reduced Solar Field Impacts (acres)	Transmission Line (IVW-2 + IVW-2B) Impacts (acres)	Total Impacts (acres)
Permanent Impacts												
Creosote bush–white burr sage scrub (CBS)												
Access roads		6.6	6.6		6.6	6.6		7.9	7.9		6.6	6.6
Monopole footings		<0.1	<0.1		<0.1	<0.1		-			<0.1	<0.1
Lattice tower footings		-			-			<0.1	<0.1		-	-
CBS Sub-total		*6.6*	*6.6*		*6.6*	*6.6*		*7.9*	*7.9*		*6.6*	*6.6*
Desert Wash (DW)												
Solar field	6.7		6.7	6.7		6.7	6.7			6.7		6.7
Access roads		0.2	0.2		0.2	0.2		0.5	0.5		0.2	
Lattice tower footings		-			-			<0.1	<0.1		-	
DW Sub-total	*6.7*	*0.2*	*6.9*	*6.7*	*0.2*	*0.2*	*6.7*	*0.5*	*0.5*	*6.7*	*0.2*	*6.9*
Mesquite Thicket (MT)	5.7	-	5.7	5.7	-	5.7	5.7	-	5.7	5.7	-	5.7
Tamarisk Thicket (TT)	7.2		7.2	7.2		7.2	7.2		7.2	7.2		7.2
Abandoned Agriculture (AA)	1,051.9	-	1,051.9	1,051.9	-	1,051.9	1,051.9	-	1,051.9	1041.6	-	1041.6
Permanent Impact Totals	**1,071.5**	**6.8**	**1,078.3**	**1,071.5**	**6.8**	**1,078.3**	**1,071.5**	**8.4**	**1079.9**	**1061.2**	**6.8**	**1068.0**
Temporary Impacts												
Creosote bush–white burr sage scrub												
Pullsite		0.1	0.1		0.4	0.4		0.3	0.3		0.1	0.1
Monopole work areas		6.8	6.8		6.4	6.4		0.4	0.4		6.8	6.8
Lattice tower work areas		-	-		-	-		3.6	3.6		-	-
CBS Sub-total		*6.9*	*6.9*		*6.8*	*6.8*		*4.3*	*4.3*		*6.9*	*6.9*
Desert Wash (DW)												
Lattice tower sites		-	-		-	-		0.2	0.2		-	-
DW Sub-total		-	-		-	-		*0.2*	*0.2*		-	-
Temporary Impact Total		**6.9**	**6.9**		**6.8**	**6.8**		**4.5**	**4.5**		**6.9**	**6.9**
TOTAL IMPACTS	**1,071.5**	**13.7**	**1,085.2**	**1,071.5**	**13.6**	**1,085.1**	**1,071.5**	**12.9**	**1,084.4**	**1061.2**	**13.6**	**1074.9**

solar facility components may result in the direct mortality, injury, or harassment of FTHLs. These impacts would be considered significant and mitigation would be required.

The proposed transmission corridor alternatives are within the Yuha Desert Flat-tailed Horned Lizard Management Area, as designated in the 2003 *Flat-tailed Horned Lizard Rangewide Management Strategy* (RMS; ICC 2003; Attachment 1: Figure 10). The creosote bush–white burr sage scrub vegetation within the Management Area provides habitat for this species, and impact to this habitat is considered potentially significant. In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, compensation would be required for impact to FTHL habitat. In accordance with the RMS, the proposed impacts to the MA are the minimum necessary to construct the project.

- The proposed ISEC West solar field is located outside of the Yuha MA, within abandoned agricultural fields.

- The majority of the transmission line towers along IVW-2 will be located adjacent to another transmission line proposed by Imperial Irrigation District (IID), and will share a primary access road with the proposed IID alignment for installation as well as O&M; small spur roads will extend from the proposed primary access road for access to this line.

- Extensive resource surveys have been conducted to facilitate the siting of the transmission components to insure they are located in a manner that is the least disturbing to resources.

- Whenever possible, any removal of vegetation will be in the form of trimming instead of root grubbing, to allow shrubs to readily resprout. The only soil removal necessary during transmission construction will be during excavation of tower footings and trenching.

As seen in Table 7, the Preferred Alternative for electrical transmission may permanently affect up to 6.8 acres and temporarily impact up to 6.9 acres of FTHL habitat within the MA.

Three FTHLs were observed within the abandoned agricultural fields of the proposed ISEC West solar field. In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy,* the abandoned agricultural fields are considered occupied by this species; however the weedy vegetation and compact soils provide very low-quality habitat for this species. Habitat restoration will be conducted within the solar field after construction underneath and surrounding the solar panels, outside of the required access roads for O&M, as part of the proposed project; this restoration is expected to increase the value of the habitat from very low quality to native desert habitat that is suitable for FTHL. As the proposed project is expected to improve the habitat quality of

TABLE 7
IMPACTS TO FLAT-TAILED HORNED LIZARD HABITAT FOR ISEC WEST PROJECT

	Solar Field Impacts (acres)	Proposed Transmission Line (IVW-2 + IVW-2B) Impacts (acres)	Total Impacts (acres)	Solar Field Impacts (acres)	Alternative A Transmission Line (IVW-2 + IVW-2A) Impacts (acres)	Total Impacts (acres)	Solar Field Impacts (acres)	Alternative B Transmission Line (IVW-1) Impacts (acres)	Total Impacts (acres)	Reduced Solar Field Impacts (acres)	Transmission Line (IVW-2 + IVW-2B) Impacts (acres)	Total Impacts (acres)
Permanent Impacts												
Inside FTHL MA												
Access roads		6.8	6.8		6.8	6.6		8.4	8.4		6.8	6.8
Monopole footings		<0.1	<0.1		<0.1	<0.1		-			<0.1	<0.1
Lattice tower footings		-			-			<0.1	<0.1		-	
Inside Sub-total		*6.8*	*6.8*		*6.8*	*6.6*		*8.4*	*8.4*		*6.8*	*6.8*
Private Land Outside FTHL MA												
Solar field	1058.6		1058.6	1058.6		1058.6	1058.6		1058.6	1048.3		1048.3
Outside Sub-total	*1058.6*		*1058.6*	*1058.6*		*1058.6*	*1058.6*		*1058.6*	*1048.3*		*1048.3*
Permanent Impact Totals	**1,058.6**	**6.8**	**1,065.4**	**1,058.6**	**6.8**	**1,065.4**	**1,058.6**	**8.4**	**1067.0**	**1048.3**	**6.8**	**1055.1**
Temporary Impacts												
Inside FTHL MA												
Pullsite		0.1	0.1		0.4	0.4		0.3	0.3		0.1	0.1
Monopole work areas		6.8	6.8		6.4	6.4		0.4	0.4		6.8	6.8
Lattice tower work areas								3.8	3.8			
Inside Sub-total		*6.9*	*6.9*		*7.0*	*7.0*		*4.5*	*4.5*		*6.9*	*6.9*
Temporary Impact Total		**6.9**	**6.9**		**7.0**	**7.0**		**4.5**	**4.5**		**6.9**	**6.9**
TOTAL IMPACTS	**1,058.6**	**13.7**	**1072.3**	**1,058.6**	**13.8**	**1072.4**	**1,058.6**	**12.9**	**1071.5**	**1048.3**	**13.7**	**1062.0**

the abandoned agricultural fields, the level of impacts to the abandoned agricultural fields would be less than significant, and no mitigation would be required.

Indirect Impacts

Disturbance of soil and vegetation will take place during construction, which can encourage invasive, exotic plant species to encroach into FTHL habitat. In addition, construction vehicles and equipment can transport seeds and vegetation from other regions within their tires and other various parts under the vehicles. This potential increase in invasive, exotic plant species would be considered a significant impact to FTHL due to construction of the proposed project and mitigation would be required.

4.1.2.1.2 Operations and Maintenance Impacts

Direct Impacts

General O&M activities that may be conducted along the transmission line and within the ISEC West solar field include equipment inspection and/or repairs, solar panel or transmission tower washing, weed abatement activities, and a security guard within the solar field. These O&M activities will require vehicles to occasionally drive the access roads along the transmission line or within the solar field. If the CPV solar panels are used for the solar facility, washing of the panels would be required at least 6 times per year (as opposed to once or twice per year with the PV solar panels). Washing of the panels would require a water truck to drive on designated access roads between the panels; using a high-powered sprayer or hose for the washing.

FTHL injury or mortality could potentially occur due to occasional use of the transmission line access roads, or driving access roads within the solar field, weed abatement, or any other activities that may result in ground disturbance outside of the designated access roads. These potential impacts would be considered significant, and mitigation would be required.

Indirect Impacts

Avian predators such as ravens, loggerhead shrikes, and American kestrals may be drawn to the solar field due to the increase in food sources such as garbage cans and nesting/perching areas such as the perimeter fence. This increase in avian predators may indirectly impact FTHL within and adjacent to the MA. This potential indirect impact to FTHLs would be considered significant and would require mitigation.

4.1.2.2 Burrowing Owl

Construction Impact

The 1995 California Department of Fish and Game's Staff Report on Burrowing Owl Mitigation (CDFG 1995) defines impact to burrowing owl as:

- Disturbance within 50 meters (approx. 160 feet.) which may result in harassment of owls at occupied burrows;
- Destruction of natural and artificial burrows (culverts, concrete slabs, and debris piles that provide shelter to burrowing owls); and
- Destruction and/or degradation of foraging habitat adjacent (within 100 meters) of an occupied burrow(s).

As seen in Attachment 1: Figures 8a–8b, two occupied burrowing owl burrows were observed within the abandoned agricultural fields during on-going focused breeding season surveys. These fields will be graded during construction activities including any berms and culverts that may host burrowing owl. As discussed in Section 5.3.2, a pre-construction survey should be conducted prior to grading, as the number and location of owls may change from year to year. Impact to any burrowing owl individuals and/or active burrowing owl burrows would be considered potentially significant, and mitigation in the form of avoidance and impact minimization would be required to reduce the impact to a level of less than significant.

The creosote bush–white burr sage scrub vegetation along the proposed transmission line and the abandoned agricultural fields within the proposed solar field offer suitable habitat for this species. A total of 6.6 acres of creosote bush–-white burr sage scrub will be permanently impacted by the Preferred Alternative proposed transmission line.

The abandoned agricultural fields and associated berms that contain the active burrowing owl burrows will be permanently impacted by the proposed solar field. In accordance with the CDFG Staff Report on Burrowing Owl Mitigation (1995), impacts to the foraging habitat within 100 meters (approximately 300 feet) of each active burrow would be considered significant and would require mitigation for the 13 acres of foraging habitat.

O&M Indirect Impact

After construction of the solar field is complete, burrowing owls may occur within the creosote bush–white burr sage scrub vegetation adjacent to the solar field, including using the perimeter fence as a foraging perch.

All permanent lighting within the solar field will be low profile fixtures that point inward toward the solar field with directional hoods or shades to reduce light from shining into the adjacent habitat. In addition, any lighting not required daily for security purposes will have motion sensor or temporary use capabilities. No significant impact due to lighting is expected to occur to this species, and no mitigation is required.

No equipment or components of the solar field or transmission lines are expected to produce noise that would exceed ambient noise in the vicinity. No significant impact due to noise is expected to occur to this species, and no mitigation is required.

4.1.2.3 Nesting Raptors

Construction Impact

The existing transmission towers and few tall trees within the survey provide nesting opportunities for raptors. In order to prevent direct and indirect noise impact to nesting raptors such as red-tailed hawk, initial grading and construction within the proposed project site should take place outside the raptors' breeding season of February 1 to July 15. If construction occurs between February 1 and July 15, significant impact to an active raptor nest may occur, and mitigation in the form of avoidance and impact minimization would be required to reduce the impacts to a level of less than significant.

O&M Indirect Impact

Electrocution

The Avian Powerline Interaction Committee's (APLIC) 1996 report (APLIC 1996 as cited in CEC 2002a) on power line electrocution in the United States reports that avian electrocution risk is highest along distribution lines (generally less than 69 kV) where the distance between energized phases, ground wires, transformers, and other components of an electrical distribution system are less than the length or skin-to-skin contact distance of birds (CEC 2002a). The distance between energized components along transmission lines (> 69 kV) is generally insufficient to present avian electrocution risk (CEC 2002a).

The towers and/or monopoles proposed along the alternate transmission line routes are designed to prevent avian electrocution, with a top-most arm structure above the conductors that may hold grounding wires or other insulated utility lines (Lightsource 2010). In addition, each phase's insulators, attached to the conductors at each arm of the towers/monopoles, are spaced at least 30 feet apart (Lightsource 2010); far enough apart that North American raptors' wingspans cannot reach two insulators at once.

No impacts to raptors are expected to occur due to electrocution along the proposed transmission line, and no mitigation would be required. However; in order to address any

potential avian mortality that may occur during O&M activities along the transmission line, an Avian and Bat Protection Plan (ABPP) will be developed that will incorporate guidance from USFWS (2010e) and the Avian Powerline Interaction Committee (APLIC 2006), and will include a wildlife mortality reporting program. This ABPP is discussed further in Section 5 and will provide the applicant the vehicle to comply with the MBTA.

Collision

Potential indirect impact to raptors and other avian species due to collision with the proposed transmission lines are discussed below in Section 4.1.2.4 Migratory Birds and Other Sensitive Non-migratory Species.

4.1.2.4 Migratory Birds and Other Sensitive Non-migratory Species

”Take” of a migratory bird species, which includes unintentionally killing adult birds or destroying active nests, would be considered a violation of the MBTA. An ABPP, subject to the approval of USFWS, would be adopted that would include avoidance and minimization measures to address potential construction and operations phase impacts. See Section 5.3.4.

Construction Impacts

If construction occurs between February 1 and September 15, which is a composite breeding season for most migratory bird species, direct impact may occur, and mitigation in the form of avoidance and impact minimization would be required to reduce the impact to a level of less than significant.

O&M Indirect Impacts

Lighting

All permanent lighting within the solar field will be low-profile fixtures that point inward toward the solar field with directional hoods or shades to reduce light from shining into the adjacent habitat. In addition, any lighting not required daily for security purposes will have motion sensor or temporary use capabilities. No significant impact due to lighting is expected to occur to this species, and no mitigation is required.

Noise

No equipment or components of the solar field or transmission lines are expected to produce noise that would exceed ambient noise in the vicinity. No significant impact due to noise is expected to occur to this species, and no mitigation is required.

Collision

Collision with the terminal ground wire (or static wire) of transmission lines has been reported as a primary cause of avian fatality from power line strikes (Meyer 1978; James and Haak 1979; Beaulaurier 1981 as cited in CEC 2002b). Ground wires are installed on transmission lines to dissipate lightning strikes thereby preventing damage to transmission structures and equipment. Fatal strikes may also occur when birds collide with transmission and distribution wires, transmissions' tower guy wires, and other structures associated primarily with electrical power transmission (CEC 2002b).

Avian power line collisions are a widespread problem with potentially significant local impact when high-risk conditions are present (CEC 2002b). Understanding the nature of this mortality factor requires the examination of a series of physical and biological factors and of the relationships between these factors that magnify collision hazards (CEC 2002b). Physical factors include weather, design and placement of transmission and distribution lines, and physiognomic factors which consider the relationship between the geographic location of power lines and the surrounding vegetative communities and land uses. Biological factors include avian morphology, physiology, behavior, and age (CEC 2002b).

The survey area is situated along the Pacific Coast Migratory Route (USGS 2010), which encounters migratory birds moving northwest from Mexico into California and the Pacific Northwestern U.S. The agricultural fields east of the proposed transmission lines, as well as the Westside Canal and other irrigation channels, are known to provide habitat for many of the migratory bird species moving through the area.

The proposed transmission lines are situated running northwest from the substation to the solar field and run parallel to the migratory flyway. That the proposed lines do not run perpendicular to migratory flight patterns and do not bisect the canals and agricultural fields, but are instead situated west of the fields, are both factors that are likely to reduce the potential for avian collision along the transmission corridor (CEC 2002b). In addition, the proposed route will be situated adjacent to another transmission line proposed by the IID, which would increase the visibility of the lines and may reduce the likelihood of collision with the lines.

Alonso and Alonso (1999 as cited in CEC 2002b) concur with other authors (e.g., Meyer 1978; James and Haak 1979; Faanes 1987 as cited in CEC 2002b) that collision fatalities are not a population decline factor and have little population-level significance, except in areas where birds are concentrated for breeding or roosting, for species with naturally low populations, or for species whose populations are threatened or endangered (CEC 2002b).

As the agricultural fields to the east act as the primary breeding and foraging habitat for migratory birds in the vicinity, the transmission line is situated within the creosote bush–

white burr sage scrub vegetation to avoid much of the avian migratory traffic. This potential indirect impact to migratory birds, while considered adverse to individuals, would be less than significant to the migratory populations and not require mitigation. However; in order to address any potential avian mortality that may occur during operations and maintenance activities along the transmission line, an ABPP will be developed that will incorporate guidance from USFWS (2010d) and the APLIC (2006), and will include a wildlife mortality reporting program. This ABPP is discussed further in Section 5, and will provide the applicant the vehicle to comply with the MBTA.

4.2 Impact to Riparian Habitat or Sensitive Natural Communities

For purposes of this report, sensitive vegetation communities (i.e., natural communities) are those identified by the CDFG (State of California 2010b) and CEQA. Reasons for the designation as "sensitive" include restricted range, cumulative losses throughout the region, and a high number of endemic sensitive plant and wildlife species that occur in the vegetation communities.

The project would have a significant impact if it would:

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFG or USFWS.

As discussed in Section 4.0 and shown on Table 6, creosote bush–white burr sage scrub, mesquite thicket, and desert wash vegetation are the three sensitive natural communities potentially affected by the proposed project. These communities are considered sensitive whether or not they have been disturbed.

4.2.1 Proposed Impact

Construction Impact

The proposed impact to creosote bush–white burr sage scrub, mesquite thicket, and desert wash vegetation, as detailed in Table 4 and shown on Attachment 1: Figures 8a–8b, could be considered potentially significant and may require mitigation to offset this impact to sensitive habitats.

O&M Indirect Impact

Soil disturbed due to grading during construction and continued use of the solar field and access roads along the transmission line may result in the introduction or increased density of non-native invasive plant species. These species can undermine the habitat quality and integrity of the native plant communities. An increase in non-native invasive

plants would be considered a potentially significant indirect impact to the creosote bush–white burr sage scrub and desert wash communities, and would require mitigation to reduce impact to a level of less than significant.

4.3 Impact to Jurisdictional Waters

All wetland areas, wetland buffer areas, and non-wetland waters of the U.S. are considered sensitive. Wetlands and non-wetland waters are under the jurisdiction of ACOE. Streambeds and associated vegetation are under the jurisdiction of CDFG. Waters of the state and waters of the U.S. are under the jurisdiction of RWQCB.

The project would have a significant impact under CEQA if it would:

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

4.3.1 Proposed Impact

Table 8 shows the proposed project impacts to ACOE and CDFG jurisdictional resources.

Construction Impact

A small wash within the southern half of the ISEC West solar field was identified during the preliminary jurisdictional delineation as potentially not being under the jurisdiction of ACOE. This feature will be impacted by the proposed solar field and, depending on the outcome of the final jurisdictional determination being reviewed by the ACOE, may require mitigation. The irrigation channels within the abandoned agricultural fields are man-made structures and are also being reviewed by the ACOE as possible features considered to be exempt from the jurisdiction.

Impact to ACOE, CDFG, and RWQCB jurisdictional resources are anticipated within both transmission route alternatives from construction of the transmission line, and mitigation will be required for this impact.

O&M Indirect Impact

The proposed solar field will use approximately 5 acre-feet of water per year to clean the solar panels and for fire protection. The small amount water used for solar panel cleaning at a given time is not expected to be substantial enough to result in run-off or soil erosion into adjacent jurisdictional drainages or channels. The substrate under the panels will remain sandy and permeable, allowing water to be absorbed into the

TABLE 8
JURISDICTIONAL RESOURCES IMPACTS FOR ISEC WEST PROJECT

Jurisdictional Resource	Preferred Alternative			Alternative A			Alternative B			Alternative C		
	Solar Field Impacts (acres)	Proposed Transmission Line (IVW-2 + IVW-2B) Impacts (acres)	Total (acres)	Solar Field Impacts (acres)	Alternative A Transmission Line (IVW-2 + IVW-2A) Impacts (acres)	Total (acres)	Solar Field Impacts (acres)	Alternative B Transmission Line (IVW-1) Impacts (acres)	Total (acres)	Reduced Solar Field Impacts (acres)	Transmission Line (IVW-2 + IVW-2B) Impacts (acres)	Total (acres)
PERMANENT IMPACTS												
ACOE—Non-wetland waters												
Access roads		0.3	0.3		0.3	0.3		0.8	0.8		0.3	0.3
Monopole footings		<0.1	<0.1		<0.1	<0.1					<0.1	<0.1
Lattice tower footings								<0.1	<0.1			
Permanent ACOE- total		***0.3***	***0.3***		***0.3***	***0.3***		***0.8***	***0.8***		***0.3***	***0.3***
CDFG—Riparian												
Solar Field*	5.7		5.7	5.7		5.7	5.7		5.7	5.7		5.7
Access roads		0.3	0.3		0.3	0.3		0.7	0.7		0.3	0.3
Monopole footings		<0.1	<0.1		<0.1	<0.1					<0.1	<0.1
Lattice tower footings								<0.1	<0.1			
Riparian Sub-total	*5.7*	*0.3*	*6.0*	*5.7*	*0.3*	*6.0*	*5.7*	*0.7*	*6.4*	*5.7*	*0.3*	*6.0*
CDFG—Streambed												
Solar Field*	0.9		0.9	0.9		0.9	0.9		0.9	0.9		0.9
Access roads		0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1
Monopole footings		<0.1	<0.1		<0.1	<0.1					<0.1	<0.1
Lattice tower footings								<0.1	<0.1			
Streambed Sub-total	*0.9*	*0.1*	*1.0*	*0.9*	*0.1*	*1.0*	*0.9*	*0.1*	*1.0*	*0.9*	*0.1*	*1.0*
Permanent CDFG- total	***6.6***	***0.4***	***7.0***	***6.6***	***0.4***	***7.0***	***6.6***	***0.8***	***7.4***	***6.6***	***0.4***	***7.0***
TEMPORARY IMPACTS												
ACOE—Non-wetland waters												
Monopole work areas		0.2	0.2		0.2	0.2					0.2	0.2
Lattice tower work areas		-	-		-	-		0.3	0.3		-	-
Temporary ACOE-NWW total	***-***	***0.2***	***0.2***		***0.2***	***0.2***		***0.3***	***0.3***	***-***	***0.2***	***0.2***
CDFG—Riparian												
Monopole work areas		0.2	0.2		0.2	0.2					0.2	0.2
Lattice tower work areas								0.2	0.2			
Riparian Sub-total	*-*	*0.2*	*0.2*		*0.2*	*0.2*		*0.2*	*0.2*	*-*	*0.2*	*0.2*
CDFG—Streambed												
Monopole work areas		<0.1	<0.1		<0.1	<0.1					<0.1	<0.1
Lattice tower work areas								0.1	0.1			
Streambed Sub-total		*<0.1*	*<0.1*		*<0.1*	*<0.1*		*0.1*	*0.1*		*<0.1*	*<0.1*
Temporary CDFG- total	***-***	***0.2***	***0.2***		***0.2***	***0.2***		***0.3***	***0.3***	***-***	***0.2***	***0.2***
ACOE TOTAL	***-***	***0.5***	***0.5***	***-***	***0.5***	***0.5***	***-***	***1.1***	***1.1***	***-***	***0.5***	***0.5***
CDFG TOTAL	***6.6***	***0.6***	***7.2***	***6.6***	***0.6***	***7.2***	***6.6***	***1.1***	***7.7***	***6.6***	***0.6***	***7.2***

*Potentially exempt small wash to be confirmed by ACOE.

soil. No impact to jurisdictional resources due to operations and maintenance is expected to occur, and no mitigation would be required.

4.4 Impact to Wildlife Movement and Nursery Sites

Wildlife movement corridors are considered sensitive by resource and conservation agencies. The impact analysis provided below is based on the CEQA Guidelines Appendix G thresholds of significance. The project would have a significant impact if it would:

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

4.4.2 Proposed Impact

Mitigation measures found in the *Flat-tailed Horned Lizard Rangewide Management Strategy* (ICC 2003) that require a minimization of habitat disturbance along the transmission lines would ensure the continued ability of wildlife to move freely through the project area.

A chain link perimeter fence will surround the proposed solar field, allowing small mammals and reptiles to move freely through the site. Although medium- and large-sized mammals will not be able to move through the solar field, it should not inhibit their movement through the Yuha Basin. Currently, the proposed solar field is bisected by Interstate 8. While many terrestrial species cross over the freeway to move from north to south through the area, it likely limits the amount of wildlife movement. The two corridors in the vicinity that allow wildlife to cross freely from north to south without crossing the interstate are found at the Dunaway Road freeway on-ramp/exit-ramp, allowing wildlife to cross over on the Dunaway Road freeway overpass, and the Westside Canal maintenance road that runs underneath Interstate 8. Neither of these roads will be disturbed by the proposed construction, and medium- to large-sized mammals will continue to have access to these crossings.

Thus there is no anticipated impact to wildlife movement or nursery sites, and no additional mitigation would be required.

4.5 Impact to California Desert Conservation Area

Pursuant to CEQA, the project would have a significant impact if it would:

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The BLM manages all land uses within the ACEC in order to minimize impact to this sensitive area. The proposed transmission lines are an allowable use under the CDCA, as the proposed ROW falls within the CDCA designated "Utility Corridor N." All proposed impacts to resources discussed in Section 4 are in conformance with the CDCA and maintain the integrity and intent of the Conservation Plan.

5.0 Recommended Mitigation

5.1 General Project Mitigation Recommendations

A number of general measures, designed to reduce potential indirect impact to resources in the project area as well as restore and/or improve the quality of habitat in the project area will be implemented after construction as standard O&M protocols. In order to reduce potential impact to biological resources during O&M, the following should be implemented:

- A brief Annual Report will be submitted to the relevant resource agencies documenting the implementation of the following general measures, as well as any resource-specific measures such as habitat restoration and/or compensation:

    - Speed limits along all transmission access roads and within the solar field should not exceed 15 miles per hour. Transmission access for O&M activities shall be kept to the minimum necessary for operations. This limited access is designed to prevent FTHL mortality.

    - Annual formal Worker Education Training should be established for all employees and any subcontractors at the ISEC West to provide instruction on sensitive species identification; measures to avoid contact, disturbance, and injury; and reporting procedures in the case of dead and/or injured wildlife species. The USFWS and the BLM shall be notified per approved guidelines and channels of authority if mortality should occur.

    - A *Raven Control Plan* will be prepared and implemented that details specific measures for storage and disposal of all litter and trash produced by the solar field and its employees. This plan is designed to discourage scavengers that may also prey on wildlife in the vicinity.

    - A *Weed Management Plan* will be prepared and implemented that describes specific on-going measures to remove weedy plant species from the solar field and encourage native plant growth. This plan should be prepared in conformance with herbicide and native seed/planting guidelines outlined in the project's *Habitat Restoration Plan*, and should be approved by the BLM.

    - A *Wildlife Mortality Reporting Program* will be prepared and implemented to identify and report any dead or injured animals observed by personnel conducting O&M activities within the solar field and along the transmission line. An appropriate reporting format for dead or injured wildlife observed

within the solar field and along the transmission line will be developed in coordination with the USFWS and the BLM. In addition, reporting of any dead or injured avian species found along the transmission line will follow the existing USFWS *Bird Fatality/Injury Reporting Program* (https://birdreport.fws.gov/).

- An *Avian and Bat Protection Plan* (ABPP) will be prepared that will outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations. These measures incorporate APLIC design guidelines for overhead utilities (2006) by incorporating recommended or other methods that enhance the visibility of the lines to avian species. The ABPP will also address disturbance minimization, timing of construction, minimization of activities that would attract prey and predators, and incorporation of the *Wildlife Mortality Reporting Program* and *Raven Control Plan* discussed above.

5.2 Special Status and Priority Plant Species

Permanent impact will occur to 49 Thurber's pilostyles plants and its associated Emory indigo shrubs. Individual plants should be relocated, when appropriate, or included as part of the restoration palette for this impact. Restoration standards, including potential transplantation and other conservation measures, should be developed in coordination with the BLM and other state and/or federal agencies as appropriate.

5.3 Sensitive Wildlife

5.3.1 Flat-tailed Horned Lizard

5.2.1.1 Construction Measures

In accordance with the *FTHL Rangewide Management Strategy* (ICC 2003), the measures proposed below are designed to avoid, minimize, and/or compensate for potential direct and indirect effects construction of the proposed project may have on FTHL. The following will be implemented when conducting construction activities on the transmission line and within the solar field:

1. Prior to ground disturbing activities, an individual shall be designated and approved by the USFWS and BLM as a Designated Biologist[1] (i.e. field contact

[1] A qualified Designated Biologist must have (1) a bachelor's degree with an emphasis in ecology, natural resource management, or related science; (2) three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or the Wildlife Society (3) previous experience with applying terms

representative). A Designated Biologist will be designated for the period during which on-going construction and post-construction monitoring and reporting by an approved biologist is required, such as annual reporting on habitat restoration. Each successive Designated Biologist will be approved by the BLM's Authorized Officer (i.e., BLM field manager, El Centro). The Designated Biologist will have the authority to ensure compliance with the conservation measures for the FTHL and will be the primary agency contact for the implementation of these measures. The Designated Biologist will have the authority and responsibility to halt activities that are in violation of the conservation measures. A detailed list of responsibilities for the Designated Biologist is summarized below. To avoid and minimize impacts to biological resources, the Designated Biologist and/or biological monitor(s) will:

- Notify BLM's Authorizing Officer and the USFWS at least 14 calendar days before initiating ground-disturbing activities.

- Immediately notify BLM's Authorized Officer and the USFWS in writing if the Project applicant is not in compliance with any conservation measures, including but not limited to any actual or anticipated failure to implement conservation measures within the time periods specified.

- Conduct compliance inspections at a minimum of once per month during on-going construction after clearing, grubbing, and grading are completed, and submit a monthly compliance report to BLM's Authorized Officer until construction is complete.

2. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) will be delineated with stakes and flagging prior to construction activities. Spoils will be stockpiled in disturbed areas lacking native vegetation or where habitat quality is poor. To the extent possible, disturbance of shrubs and surface soils due to stockpiling will be minimized. All disturbances, vehicles, and equipment will be confined to the flagged areas. To the extent possible, surface disturbance will be timed to minimize mortality to FTHL (see FTHL Construction Measure #7 below).

3. Approved Biological monitor(s) will assist the Designated Biologist in conducting pre-construction surveys and in monitoring of mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities. The biological monitor(s) will have experience conducting FTHL field monitoring, have sufficient education and field experience to understand FTHL biology, be able to identify

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and conditions of a biological opinion; and, (4) the appropriate permit and/or training if conducting focused or protocol surveys for listed or proposed species.

FTHL scat, and be able to identify and follow FTHL tracks. The Designated Biologist will submit the resume, at least three references, and contact information of the proposed biological monitors to the BLM, CDFG, and USFWS for approval. To avoid and minimize impacts to biological resources, the Biological Monitors will assist the Designated Biologist with the following:

- Be present during construction (e.g., grubbing, grading, solar panel installation) activities that take place in FTHL habitat to avoid or minimize take of FTHL. Activities include, but are not limited to, ensuring compliance with all impact avoidance and minimization measures, monitoring for FTHLs and removing lizards from harm's way, and checking avoidance areas (e.g., washes) to ensure that signs, and stakes are intact and that human activities are restricted in these avoidance zones.

- At the end of each work day, inspect all potential wildlife pitfalls (trenches, bores and other excavations) for wildlife and then backfill. If backfilling is not feasible, all trenches, bores, and other excavations will be contoured at a 3:1 slope at the ends to provide wildlife escape ramps or be completely and securely covered to prevent wildlife access.

- During construction, examine areas of active surface disturbance periodically, at least hourly, when surface temperatures exceed 29°Celsius (C; 85°F) for the presence of FTHL.

4. Prior to Project initiation, a worker environmental awareness program (WEAP) will be developed and implemented, and will be available in both English and Spanish. Wallet-sized cards summarizing this information will be provided to all construction, operation, and maintenance personnel. The education program will include the following aspects:

   - biology and status of the FTHL,

   - protection measures designed to reduce potential impact to the species,

   - function of flagging designating authorized work areas,

   - reporting procedures to be used if a FTHL is encountered in the field, and

   - driving procedures and techniques, for commuting to, and driving on, the Project site, to reduce mortality of FTHL on roads.

5. FTHLs will be removed from harm's way during all construction activities, per Conservation Measure #6 below. FTHL removal will be conducted by two or more biological monitors when construction activities are being conducted in suitable FTHL habitat. To the extent feasible, methods to find FTHLs will be

designed to achieve a maximal capture rate and will include, but not be limited to using strip transects, tracking, and raking around shrubs. During construction, the minimum survey effort will be 30 minutes per 0.40 ha (30 minutes per 1 ac). Persons that handle FTHLs will first obtain all necessary permits and authorization from the CDFG. If the species is federally listed, only persons authorized by both CDFG and the USFWS will handle FTHLs. FTHL removal surveys will also include:

- *A Horned Lizard Observation Data Sheet and a Project Reporting Form*, per Appendix 8 of the RMS, will be completed. During construction, quarterly reports describing FTHL removal activity, per the reporting requirements described in Conservation Measure #1 above, will be submitted to the USWFW, BLM, and CDFG.

6. The removal of FTHLs out of harm's way will include relocation to nearby suitable habitat in low-impact (e.g., away from roads and solar panels) areas of the Yuha MA. Relocated FTHLs will be placed in the shade of a large shrub in undisturbed habitat. If surface temperatures in the sun are less than 24° Celsius (C) 75° Fahrenheit (F) or exceed 38°C (100° F), the Designated Biologist or biological monitor, if authorized, will hold the FTHL for later release. Initially, captured FTHLs will be held in a cloth bag, cooler, or other appropriate clean, dry container from which the lizard cannot escape. Lizards will be held at temperatures between 75° F and 90° F and will not be exposed to direct sunlight. Release will occur as soon as possible after capture and during daylight hours. The Designated Biologist or biological monitor will be allowed some judgment and discretion when relocating lizards to maximize survival of FTHLs found in the Project area.

7. To the maximum extent practicable, grading in FTHL habitat will be conducted during the active season, which is defined as March 1 through September 30, or if ground temperatures are between 24°C (75° F) and 38 °C (100° F). If grading cannot be conducted during this time, any FTHLs found will be removed to low-impact areas (see above) where suitable burrowing habitat exists, (e.g., sandy substrates and shrub cover).

8. Temporarily disturbed areas associated with transmission line construction and staging areas, will be revegetated according to a Habitat Restoration Plan (HRP) approved by the BLM, CEC, CDFG, and Service. The HRP must be approved in writing by the aforementioned agencies prior to the initiation of any vegetation disturbing activities. Restoration involves recontouring the land, replacing the topsoil (if it was collected), planting seed and/or container stock, and maintaining (i.e., weeding, replacement planting, supplemental watering, etc.), and

monitoring the restored area for a period of 5 years (or less if the restoration meets all success criteria). Components of the HRP will include:

- The incorporation of Desert Bioregion Revegetation/Restoration Guidance measures. These measures generally include alleviating soil compaction, returning the surface to its original contour, pitting or imprinting the surface to allow small areas where seeds and rain water can be captured, planting seedlings that have acquired the necessary root mass to survive without watering, planting seedlings in the spring with herbivory cages, broadcasting locally collected seed immediately prior to the rainy season, and covering the seeds with mulch.

5.2.1.2 O&M Measures

In order to reduce the potential impact to FTHL during O&M, the following will be implemented when conducting O&M along the transmission line and within the solar field:

9. No later than January 31 of every year the Project remains in operation, the Designated Biologist will provide the BLM's Authorized Officer, USFWS, CDFG, and the FTHL Interagency Coordinating Committee (ICC) an annual FTHL Status Report, which will include, at a minimum:

    - A general description of the status of the project site
    - A copy of the table in the Project biological monitoring report with notes showing the current implementation status of each conservation measure.
    - An assessment of the effectiveness of each completed or partially completed measure in avoiding and minimizing project impacts
    - A completed a Project Reporting Form from the Flat-tailed Horned Lizard Rangewide Management Strategy (RMS) (ICC 2003)
    - A summary of information regarding any FTHL mortality in conjunction with the Project's Wildlife Mortality Reporting Program.
    - Recommendations on how conservation measures might be changed to more effectively avoid, minimize, and offset future project impacts on the FTHL.

10. The Designated Biologist or biological monitor(s) will evaluate and implement the best measures to reduce FTHL mortality along access and maintenance roads, particularly during the FTHL active season (March 1 through September 30). These measures will include:

- A speed limit of 15 miles per hour when driving transmission line access roads or maintenance roads within the solar field. All vehicles required for O&M along the transmission line and within the solar field must remain on the designated access/maintenance roads.

- Pedestrian access outside of the designated access roads is permitted year-round as long as no ground disturbing activities takes place (such as weed abatement or other activities that would require soil disturbance beyond pedestrian footprints). This pedestrian access includes occasional inspections of solar panels and other on-site facilities.

- O&M activities including weed abatement, or any other O&M activity that may result in ground disturbance outside of the designated access roads will be conducted outside of the FTHL active season whenever feasible.

- If any O&M activities must be conducted during the FTHL active season that may result in ground disturbance, such as weed abatement or vehicles requiring access outside of a designated access road, a biological monitor will be present during activities to insure no FTHLs are impacted.

Implementation of these measures would be based on FTHL activity levels, the best professional judgment of the Designated Biologist, and site specific road utilization. FTHL found on access/maintenance roads if monitoring is required will be relocated per Conservation Measure #7.

5.2.1.2 Compensation

In accordance with the *Flat-tailed Horned Lizard Rangewide Management Strategy*, mitigation would be required for impacts to FTHL habitat, as shown in Table 9.

FTHL is known to occur in the creosote bush–white burr sage scrub and desert wash vegetation along the proposed transmission corridors. In accordance with the *Rangewide Management Strategy*, compensation for impacts to this habitat within the MA will be at a 6:1 ratio.

5.3.2 Burrowing Owl

Burrowing owls have been observed in the abandoned agricultural fields within the proposed solar field. The following measures will avoid, minimize, or mitigate for potential impact to burrowing owl during construction activities.

TABLE 9
FLAT-TAILED HORNED LIZARD HABITAT MITIGATION REQUIREMENTS FOR ISEC WEST PROJECT

Vegetation Communities/ Land Cover Types	Preferred Alternative			Alternative A			Alternative B			Alternative C		
	Preferred Alternative Impacts (acres)	Mitigation Ratio	Preferred Alternative Mitigation Required (acres)	Alternative A Impacts (acres)	Mitigation Ratio	Alternative A Mitigation Required (acres)	Alternative B Impacts (acres)	Mitigation Ratio	Alternative B Mitigation Required (acres)	Reduced Solar Field-Alternative C Impacts (acres)	Mitigation Ratio	Alternative C Mitigation Required (acres)
Permanent Impacts												
Inside FTHL MA												
Access roads	6.8	6:1	40.8	6.8	6:1	40.8	8.4	6:1	50.4	6.8	6:1	40.8
Monopole footings	<0.1	6:1	<0.1	<0.1	6:1	<0.1				<0.1	6:1	<0.1
Lattice tower footings			-				<0.1	6:1	<0.1			-
Permanent Totals	6.8		**40.8**	6.8		**40.8**	8.4		**50.4**	6.8		**40.8**
Temporary Impacts												
Inside FTHL MA												
Pullsite	0.1	6:1	0.6	0.4	6:1	2.4	0.3	6:1	1.8	0.1	6:1	0.6
Monopole work areas	6.8	6:1	40.8	6.4	6:1	38.4	0.4	6:1	2.4	6.8	6:1	40.8
Lattice tower work areas	-			-			3.8	1:1	22.8	-		
Temporary Totals	6.9		**41.4**	6.8		**40.8**	4.5		**27.0**	6.9		**41.4**
TOTAL	13.7		**82.2**	13.6		**81.6**	12.9		**77.4**	13.7		**82.2**

5.3.2.1 Construction Impact Mitigation

Impact Avoidance and Minimization

1) Initial grading of the ISEC West solar field project footprint should take place between September 1 and January 31 to avoid impact to breeding burrowing owls (State of California 1995).

   If construction is to begin during the breeding season, it is recommended that the measures below are implemented prior to February 1 to discourage the nesting of the burrowing owls within the area of impact. As construction continues, any area where owls are sighted should be subject to frequent surveys for burrows before the breeding season begins, so that owls can be relocated before nesting occurs.

2) Within 30 days prior to initiation of construction, a pre-construction clearance surveys for this species shall be conducted to determine the presence or absence of this species within the construction area. This is necessary, as burrowing owls may not use the same burrow every year; therefore, numbers and locations of burrowing owl burrows at the time of construction may differ from the data collected during previous focused surveys. The proposed construction areas will need to be clearly demarcated in the field by the project engineers prior to the commencement of thepre-construction clearance survey. The survey should follow the protocols provided in the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (the California Burrowing Owl Consortium 1993).

3) If active burrows are present within the project footprint, the following mitigation measures should be implemented. Passive relocation methods are to be used to move the owls out of the impact zone. Passive relocation should only be done in the non-breeding season. This includes covering or excavating all burrows and installing one-way doors into occupied burrows. This will allow any animals inside to leave the burrow, but will exclude any animals from re-entering the burrow. A period of at least one week is required after the relocation effort to allow the birds to leave the impacted area before construction of the area can begin. The burrows should then be excavated and filled in to prevent their reuse. The destruction of the active burrows on-site requires construction of new burrows at a mitigation ratio of 2:1 at least 50 m from the impacted area and must be constructed as part of the above-described relocation efforts. The construction of new burrows will take place on BLM land to the north or south of the solar field and outside of the proposed transmission corridor.

4) As the construction schedule and details are finalized, a qualified biologist should prepare a monitoring plan that will detail the methodology proposed to minimize and mitigate impact to this species. Passive relocation, destruction of burrows, and construction of artificial burrows can only be completed upon approval by CDFG.

Compensation

CDFG's mitigation guidelines for burrowing owl (1995) requires a minimum of 6.5 acres of foraging habitat per pair or unpaired resident bird to be acquired and protected to offset the loss of foraging and burrow habitat on the project site.

Assuming the project impacts to two active burrows, a minimum of 13 acres would be permanently protected to offset this loss. This mitigation would be implemented in concert with the purchase/acquisition of mitigation for FTHL as detailed in Section 5.3.1, provided at least 13 acres of the FTHL mitigation contains suitable habitat for burrowing owl and is approved by CDFG. If FTHL mitigation is in the form of an in lieu fee to be used within the Yuha MA, which also provides suitable habitat for burrowing owl, it is assumed that the BLM or ICC's use of the funds within the MA will also improve or increase habitat for burrowing owl and will therefore fulfill the burrowing owl mitigation requirement.

5.3.2.2 O&M Impact Mitigation

In order to reduce the potential impact to burrowing owl during O&M, mitigation measures discussed in Section 5.1, including speed limits and a *Worker Education Program* should be implemented.

5.3.3 Nesting Raptors

5.3.3.1 Construction Impact Mitigation

Raptors and active raptor nests are protected under California Fish and Game Code 3503.5. In order to prevent direct and indirect noise impact to nesting raptors such as red-tailed hawk, the following measures should be implemented:

- Initial grading and construction within the proposed project site should take place outside the raptors' breeding season of February 1 to July 15.

- If construction occurs between February 1 and July 15, a qualified biologist shall conduct a pre-construction clearance survey for nesting raptors in suitable nesting habitat (e.g., tall trees or transmission towers) that occurs within 500 feet of the survey area. If any active raptor nest is located, the nest area will be flagged, and a 500-foot buffer zone delineated, flagged, or otherwise marked. No work activity may occur within this buffer area, until a qualified biologist determines that the fledglings are independent of the nest.

5.3.3.2 O&M Impact Mitigation

Mitigation for potential impact to raptors and other avian species due to collision with the proposed transmission lines are discussed below in Section 5.2.4 Migratory Birds and Other Sensitive Non-migratory Species.

5.3.4 Migratory Birds and Other Sensitive Non-migratory Bird Species

In order to reduce the potential indirect impact to migratory birds and other sensitive bird species, an ABPP will be prepared and implemented. This ABPP will outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations.

5.3.4.1 Construction Measures

Construction conservation measures to be incorporated into the ABPP include:

- Minimizing disturbance to vegetation to the extent practicable.
- Clearing vegetation outside of the breeding season. If construction occurs between February 1 and September 15, a qualified biologist shall conduct a pre-construction clearance survey for nesting birds in suitable nesting habitat that occurs within the proposed area of impact. Pre-construction nesting surveys will identify any active migratory birds (and other sensitive non-migratory birds) nests. Direct impact to any active migratory bird nest should be avoided.
- Minimize wildfire potential.
- Minimize activities that attract prey and predators.
- Control of non-native plants
- Apply APLIC design guidelines for overhead utilities (APLIC 2006) by incorporating recommended or other methods that enhance the visibility of the lines to avian species.

5.3.4.2 O&M Measures

O&M conservation measures to be incorporated into the ABPP include:

- Preparation of a *Raven Control Plan* that avoids introducing water and food resources in the area surrounding the solar field.

- Incorporate APLIC guidelines for overhead utilities as appropriate to minimize avian collisions with transmission facilities (APLIC 2006).
- Minimize noise
- Minimize use of outdoor lighting.
- Implement post-construction avian monitoring that will incorporate the *Wildlife Mortality Reporting Program*

5.4 Riparian Habitat or Sensitive Natural Community

5.4.1 Construction Impact Mitigation

Mitigation is required for impact to desert wash, a CDFG sensitive habitat, and creosote bush–white burr sage scrub vegetation, which provides suitable habitat for FTHL. Mitigation ratios and acreage requirements are detailed in Table 10.

5.4.2 O&M Impact Mitigation

In order to reduce the potential for the introduction and spread of non-native invasive plant species, mitigation measures discussed in Section 5.1, including a *Noxious Weed Abatement Plan* should be prepared for general O&M within the solar field.

5.5 Jurisdictional Waters

The proposed project will impact total of 1.4 acres of ACOE jurisdictional resources, and 7.2 acres of CDFG jurisdictional resources. A breakdown of permanent and temporary impacts, as well as the mitigation required to offset these impacts are shown for all of the alternatives on Table 11.

Mitigation for these impacts will be conducted in concert with the purchase/acquisition of mitigation for FTHL as detailed in Section 5.2.1. As the acreage for FTHL mitigation well exceeds the amount required for impacts to CDFG resources, it is not anticipated that additional mitigation would be necessary as long as the FTHL mitigation meets the requirements and approval of CDFG and ACOE as mitigation for jurisdictional resources.

Impact to jurisdictional waters of the U.S. on-site would require a permit under Section 404 CWA from the ACOE and a Section 401 state water quality certification from the RWQCB. In addition, a Section 1600 Streambed Alteration Agreement would also need to be authorized for impact to CDFG resources.

TABLE 10
VEGETATION COMMUNITY MITIGATION REQUIREMENTS FOR ISEC WEST PROJECT

Vegetation Communities/ Land Cover Types	Preferred Alternative			Alternative A			Alternative B			Alternative C		
	Preferred Alternative Impacts (acres)	Mitigation Ratio	Preferred Alternative Mitigation Required (acres)	Alternative A Impacts (acres)	Mitigation Ratio	Alternative A Mitigation Required (acres)	Alternative B Impacts (acres)	Mitigation Ratio	Alternative B Mitigation Required (acres)	Reduced Solar Field Alternative Impacts (acres)	Mitigation Ratio	Alternative C Mitigation Required (acres)
Permanent Impacts												
Creosote bush–white burr sage scrub												
Access roads	6.6	6:1	39.6	6.6	6:1	39.6	7.9	6:1	47.4	6.6	6:1	39.6
Monopole footings	<0.1	6:1	<0.1	<0.1	6:1	<0.1				<0.1	6:1	<0.1
Lattice tower footings	-		-				<0.1	6:1	<0.1	-		-
CBS Sub-total	*6.6*		*39.6*	*6.6*	*6:1*	*39.6*	*7.9*	*6:1*	*47.4*	*6.6*	*6:1*	*39.6*
Desert Wash (DW)												
Solar field	6.7	2:1	13.4	6.7	2:1	13.4	6.7	2:1	13.4	6.7	2:1	13.4
Access roads	0.2	6:1	1.2	0.2	6:1	1.2	0.5	6:1	3.0	0.2	6:1	1.2
Lattice tower footings	-		-				<0.1	6:1	<0.1		6:1	
DW Sub-total	*6.9*		*14.6*	*6.9*		*14.6*	*7.2*		*16.4*	*6.9*		*14.6*
Mesquite Thicket (MT)	5.7	1:1	5.7	5.7	1:1	5.7	5.7	1:1	5.7	5.7	1:1	5.7
Tamarisk Thicket (TT)	7.2	-	-	7.2	-	-	7.2	-	-	7.2	-	-
Abandoned Agriculture (AA)	1,051.9	-	-	1,051.9	-	-	1,051.9	-	-	1041.6	-	-
Permanent Totals	1,078.3		**59.9**	1,078.3		**59.9**	1079.9		**69.5**	1068.0		**59.9**
Temporary Impact												
Creosote bush–white burr sage scrub												
Pullsite	0.1	6:1	0.6	0.4	6:1	2.4	0.3	6:1	1.8	0.1	6:1	0.6
Monopole work areas	6.8	6:1	40.8	6.4	6:1	38.4	0.4	6:1	2.4	6.8	6:1	40.8
Lattice tower work areas	-			-			3.6	6:1	21.6	-		
CBS Sub-total	*6.9*	6:1	*41.4*	*6.8*	6:1	*40.8*	*4.3*	6:1	*25.8*	*6.9*	6:1	*41.4*
Desert Wash (DW)												
Lattice tower sites	-			-			0.2	6:1	1.2	-		
DW Sub-total	-			-			*0.2*	6:1	*1.2*	-		
Temporary Totals	6.9		**41.4**	6.8		**40.8**	4.5		**27.0**	6.9		**41.4**
TOTAL	1085.2		**101.3**	1085.1		**100.7**	1084.4		**96.5**			**101.3**

TABLE 11
JURISDICTIONAL RESOURCES MITIGATION REQUIREMENTS FOR ISEC WEST PROJECT

Jurisdictional Resource	Preferred Alternative Impacts (acres)	Mitigation Ratio	Preferred Alternative Mitigation Required (acres)	Alternative A Impacts (acres)	Mitigation Ratio	Alternative A Mitigation Required (acres)	Alternative B Impacts (acres)	Mitigation Ratio	Alternative B Mitigation Required (acres)	Alternative C Impacts (acres)	Mitigation Ratio	Alternative C Mitigation Required (acres)
PERMANENT IMPACTS												
ACOE—Non-wetland waters												
Access roads	0.3	1:1	0.3	0.3	1:1	0.3	0.8	1:1	0.8	0.3	1:1	0.3
Monopole footings	<0.1	1:1	<0.1	<0.1	1:1	<0.1				<0.1	1:1	<0.1
Lattice tower footings							<0.1	1:1	<0.1			
Permanent ACOE- total	*0.3*		***0.3***	*0.3*		***0.3***	*0.8*		***0.8***	*0.3*		***0.3***
CDFG—Riparian												
Solar Field*	5.7	2:1	11.4	5.7	2:1	11.4	5.7	2:1	11.4	5.7	2:1	11.4
Access roads	0.3	2:1	0.6	0.3	2:1	0.6	0.7	2:1	1.4	0.3	2:1	0.6
Monopole footings	<0.1	2:1	<0.1	<0.1	2:1	<0.1				<0.1	2:1	<0.1
Lattice tower footings							<0.1	2:1	<0.1			
Riparian Sub-total	*6.0*	2:1	*12.0*	*6.0*	2:1	*12.0*	*6.4*	2:1	*12.8*	*6.0*	2:1	*12.0*
CDFG—Streambed												
Solar Field*	0.9	1:1	0.9	0.9	1:1	0.9	0.9	1:1	0.9	0.9	1:1	0.9
Access roads	0.1	1:1	0.1	0.1	1:1	0.1	0.1	1:1	0.1	0.1	1:1	0.1
Monopole footings	<0.1	1:1	<0.1	<0.1	1:1	<0.1				<0.1	1:1	<0.1
Lattice tower footings							<0.1	1:1	<0.1			
Streambed Sub-total	*1.0*	1:1	*1.0*	*1.0*	1:1	*1.0*	*1.0*	1:1	*1.0*	*1.0*	1:1	*1.0*
Permanent CDFG- total	*7.0*		***13.0***	*7.0*		***13.0***	*7.4*		***13.8***	*7.0*		***13.0***
TEMPORARY IMPACTS												
ACOE—Non-wetland waters												
Monopole work areas	0.2	1:1	0.2	0.2	1:1	0.2				0.2	1:1	0.2
Lattice tower work areas	-			-			0.3	1:1	0.3	-		
Temporary ACOE-NWW total	*0.2*	**-**	***0.2***	*0.2*		***0.2***	*0.3*		***0.3***	*0.2*	**-**	***0.2***
CDFG—Riparian												
Monopole work areas	0.2	1:1	0.2	0.2	1:1	0.2				0.2	1:1	0.2
Lattice tower work areas							0.2	1:1	0.2			
Riparian Sub-total	*0.2*	1:1	*0.2*	*0.2*	*1:1*	*0.2*	*0.2*	1:1	*0.2*	*0.2*	1:1	*0.2*
CDFG—Streambed												
Monopole work areas	<0.1	1:1	<0.1	<0.1	1:1	<0.1				<0.1	1:1	<0.1
Lattice tower work areas							0.1	1:1	0.1			
Streambed Sub-total	*<0.1*	1:1	<0.1	*<0.1*	*1:1*	<0.1	*0.1*	1:1	*0.1*	*<0.1*	1:1	<0.1
Temporary CDFG- total	*0.2*	**-**	***0.2***	*0.2*		***0.2***	*0.3*		***0.3***	*0.2*	**-**	***0.2***
TOTAL ACOE	*0.5*		***0.5***	*0.5*		***0.5***	*1.1*		***1.1***	*0.5*		***0.5***
TOTAL CDFG	*7.2*		***13.2***	*7.2*		***13.2***	*7.7*		***14.1***	*7.2*		***13.2***

*Potentially exempt small wash -to be confirmed by ACOE.

6.0 Cumulative Effects

The proposed project has the potential to result in impacts to sensitive vegetation communities, flat-tailed horned lizards, burrowing owls, nesting raptors, migratory birds and other sensitive non-migratory bird species, and jurisdictional resources. However, with the implementation of the mitigation measures outlined in Section 5, these impacts would be reduced to a level of less than significant. As with the proposed project, each of the following projects would be required to provide mitigation for any impacts to biological resources; therefore, the proposed project would not contribute to a significant cumulative biological resources impact.

TABLE 12
APPROVED AND/OR PROPOSED PROJECTS IN IMPERIAL VALLEY

Project Name (Project Proponent)	Impacts to Private Lands (acres)	Impacts to BLM Land (acres)	Impacts to Yuha FTHL MAs (acres)
Existing disturbance (including Sunrise Powerlink)			180.1
"S" Line Upgrade 230-kV Transmission Line Project (Imperial Irrigation District)	106	2	2
Imperial Valley Solar (Stirling Energy Systems Two, LLC)	-	6,571	93
ISEC Solar South (CSOLAR)	837.5	10.1	10.1
Proposed Project—ISEC Solar West (CSOLAR)	1071.5	13.7	13.7
SDG&E Photovoltaic Solar Field	-	100	unknown
North Gila to Imperial Valley #2 (Southwest Transmission Partners)	-	450	3
Total	2,015	7,146.8	301.9

As shown in Table 12, existing and proposed projects are expected to impact a total of 301.9 acres of the 60,200-acre Yuha MA; approximately 0.5 percent of the 1percent of take allowable within the Yuha MA. These impacts, still under the 1-percent threshold for impacts acreage, will be mitigated in accordance with the RMS, thereby reducing impacts to a level of less than significant.

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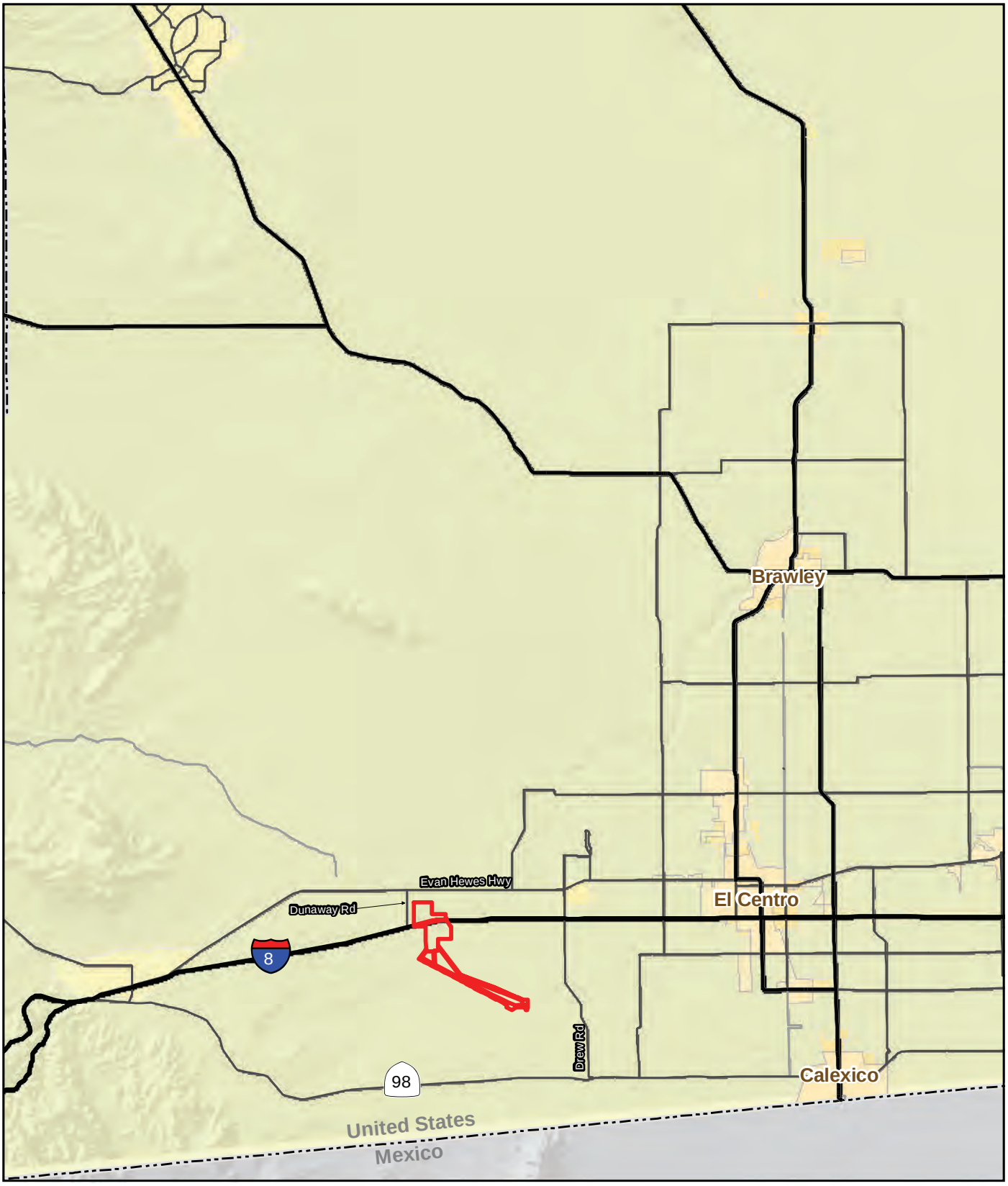
ATTACHMENTS

ATTACHMENT 1



Project Area

FIGURE 1

Regional Location

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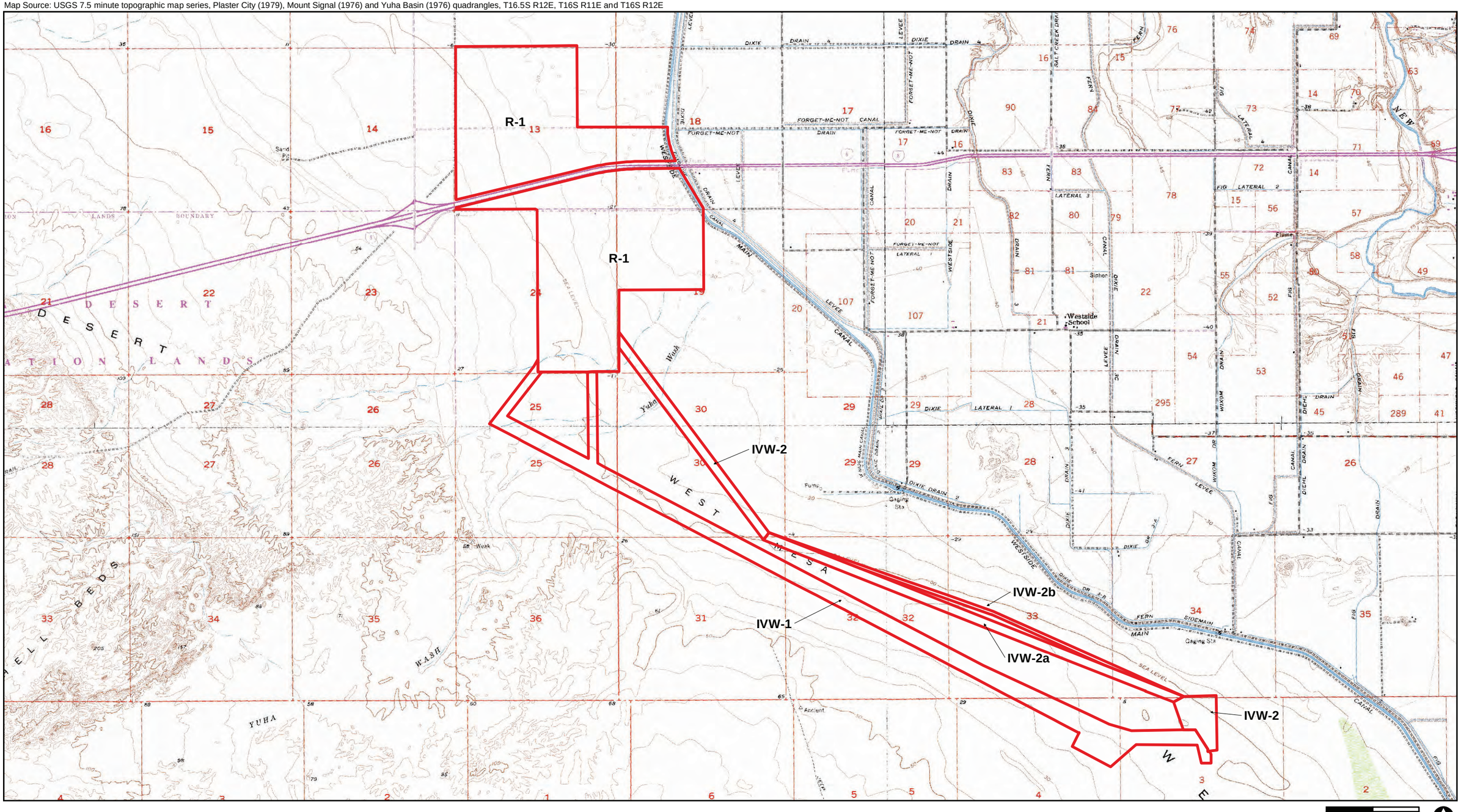
Map Source: USGS 7.5 minute topographic map series, Plaster City (1979), Mount Signal (1976) and Yuha Basin (1976) quadrangles, T16.5S R12E, T16S R11E and T16S R12E



Project Area

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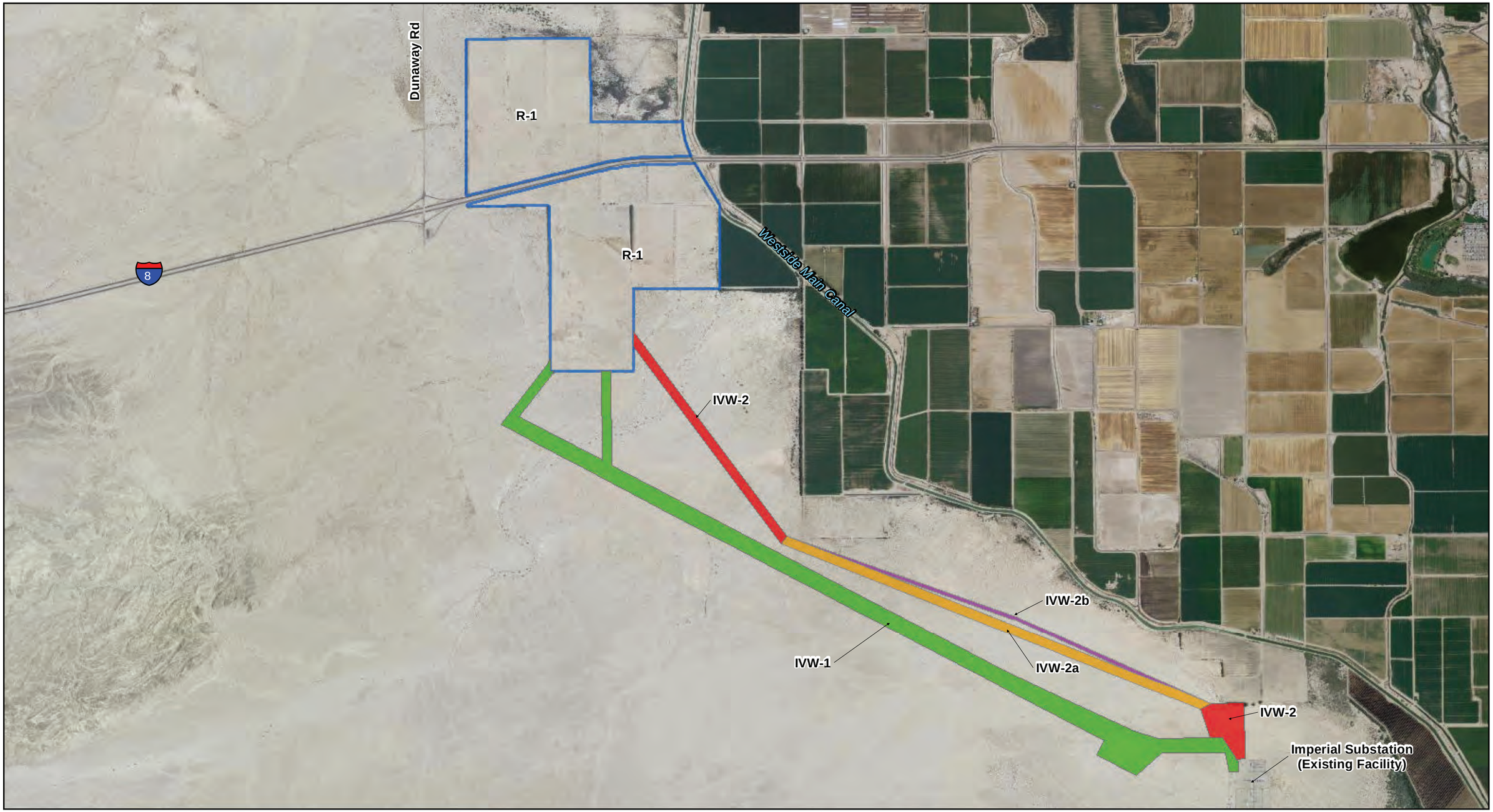
FIGURE 2

Imperial Solar Energy Center West Project Location on USGS Map

Image Source: CDFG (flown Summer 2009)



Project Components

- Preferred Transmission Line (IVW-2)
- Preferred Transmission Line (IVW-2b)
- Alternative A Transmission Line (IVW-2a)
- Alternative B Transmission Line (IVW-1)
- IV West Project Area (R-1)

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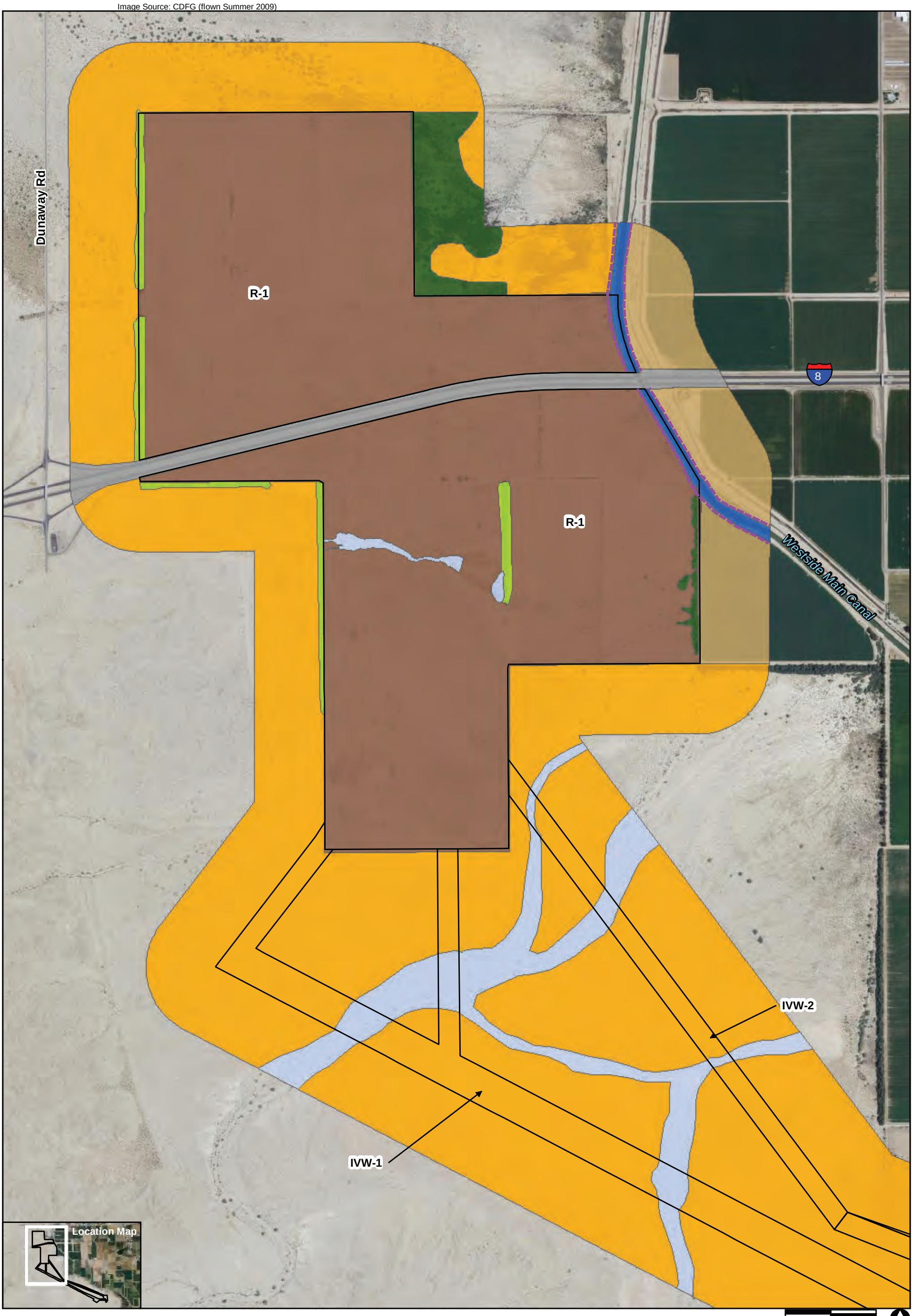
FIGURE 3

Imperial Solar Energy Center West Project Location

Image Source: CDFG (flown Summer 2009)



Survey Area

Vegetation Communities

- Active Agriculture
- Creosote Bush-White Burr Sage Scrub
- Desert Wash
- Developed
- Abandoned Agricultural Fields
- Mesquite Thicket
- Open Water/Irrigation Canal
- Tamarisk Thicket
- Arrow-weed Thicket

0 Feet 1,300

RECON

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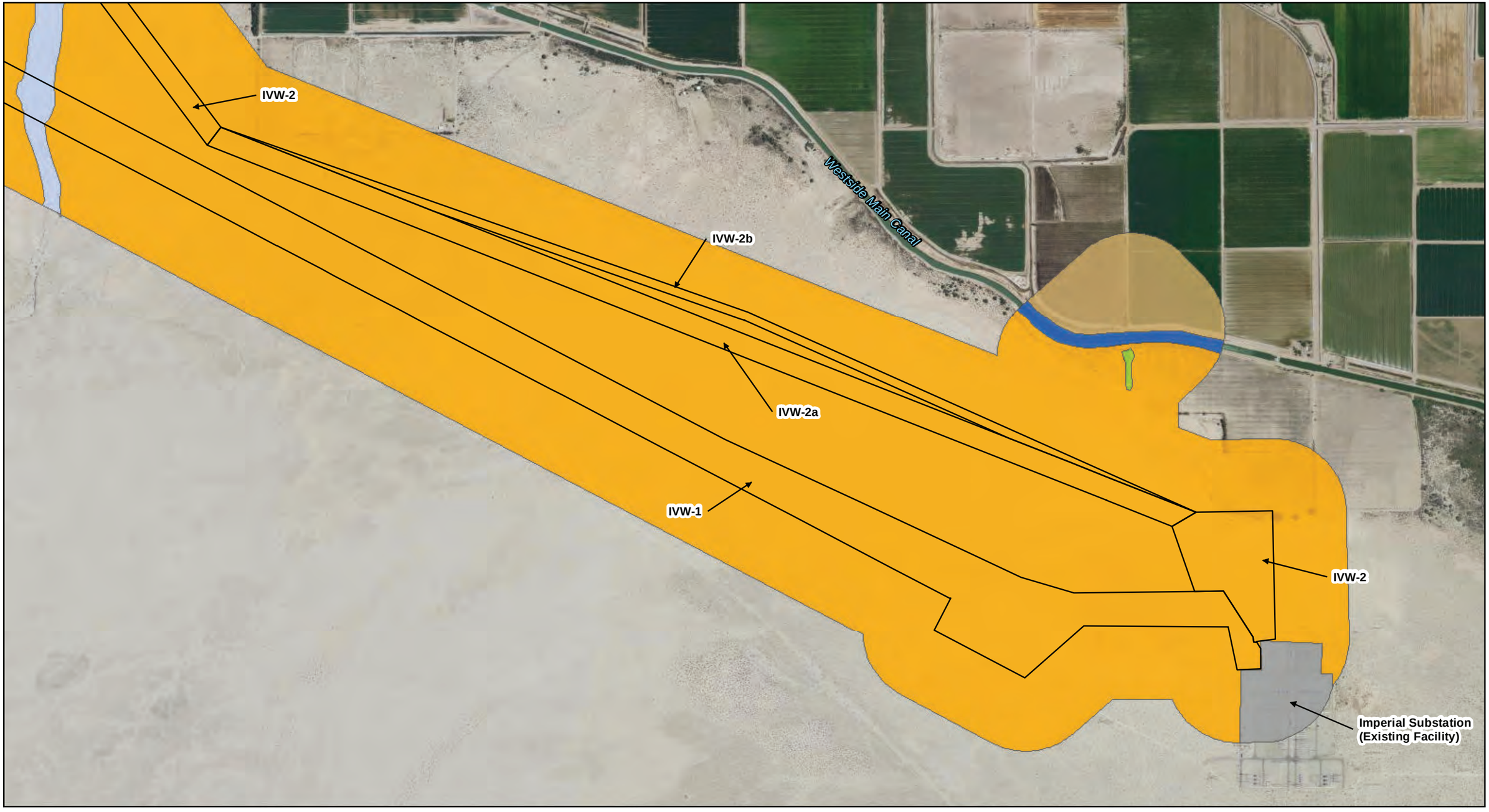
FIGURE 4a

Vegetation Communities within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Vegetation Communities

- Active Agriculture
- Creosote Bush-White Burr Sage Scrub
- Desert Wash
- Developed
- Open Water/Irrigation Canal
- Tamarisk Thicket

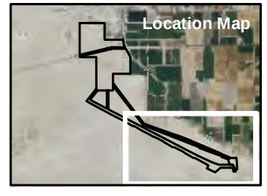


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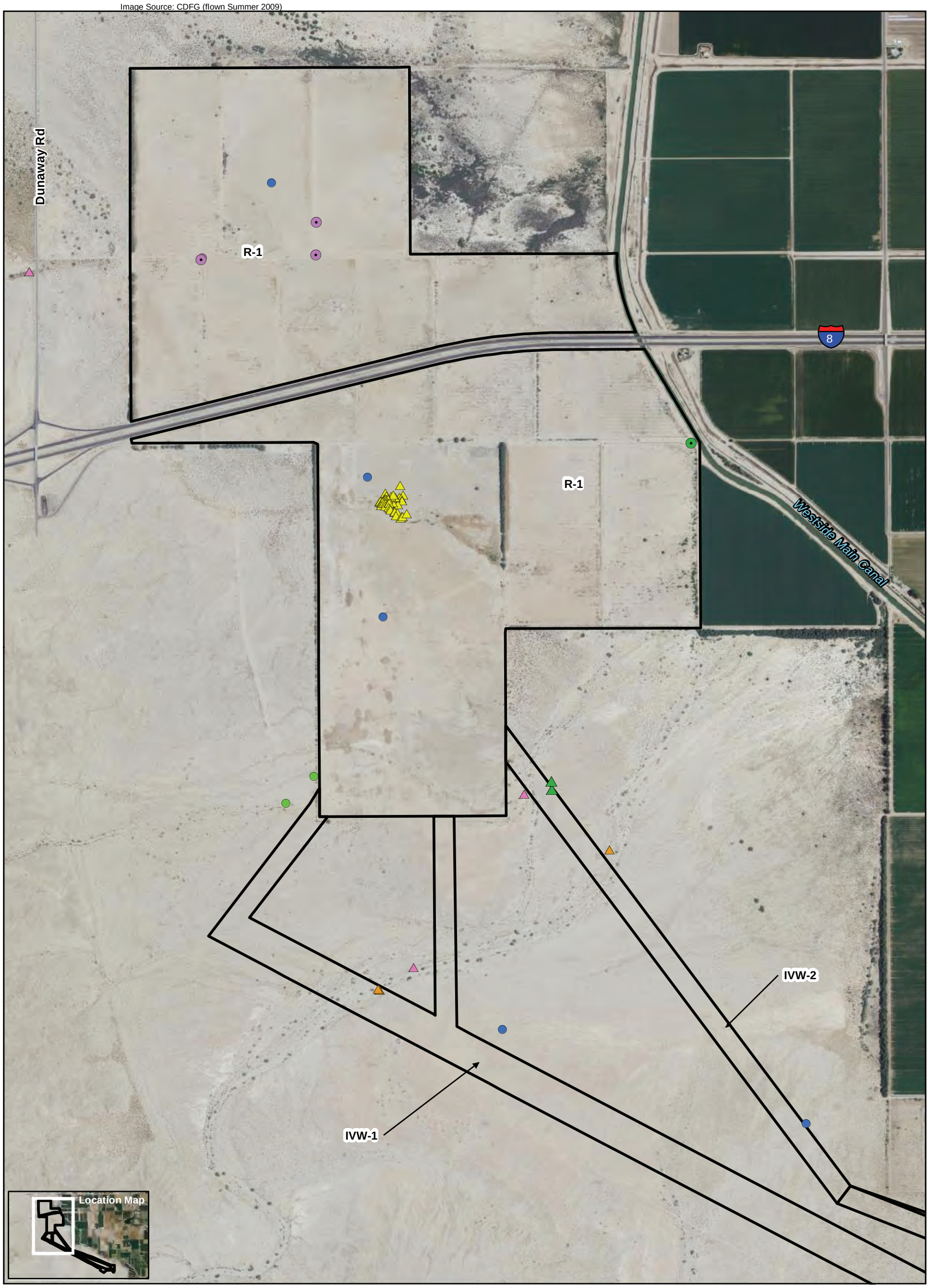
FIGURE 4b
Vegetation Communities within the
Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Sensitive Plant and Wildlife Species

- Burrowing Owl Individual (*Athene cunicularia hypugea*)
- Burrowing owl pair and active burrow (*Athene cunicularia hypugea*)
- Flat-tail Horned Lizard (*Phrynosoma mcallii*)
- Green Heron Nest (*Butorides virescens*)
- Loggerhead Shrike (*Lanius ludovicianus*)
- Parish's Desert Thorn (*Lycium parishii*)
- Salton Milkvetch (*Astragalus crotolariae*)
- Thurber's Pilostyles (*Pilostyles thurberi*)
- Brown Turbans (*Malperia tenuis*)

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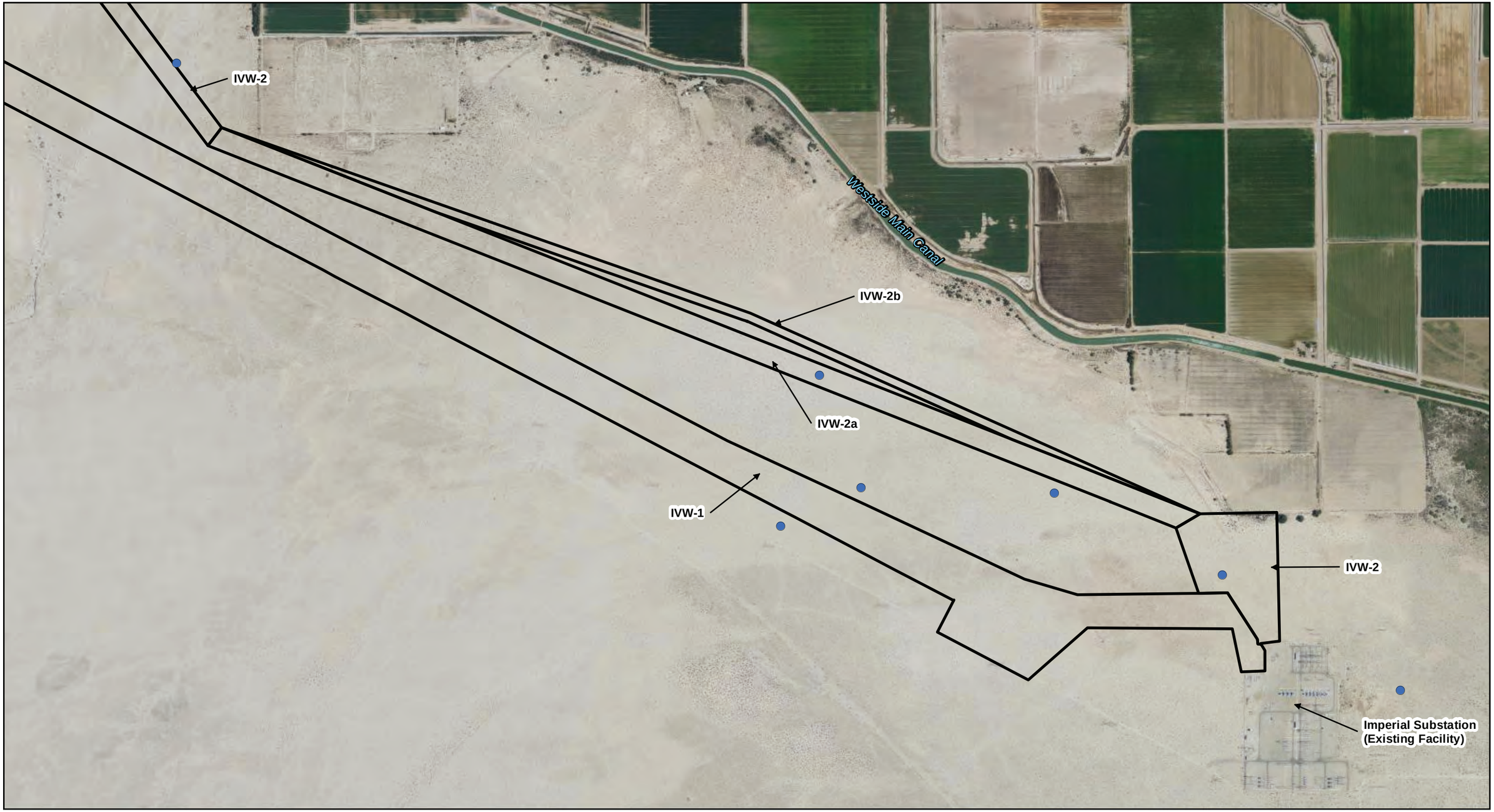
FIGURE 5a

Special Status Species within the
Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Sensitive Plant and Wildlife Species

Flat-tail Horned Lizard (*Phrynosoma mcallii*)

0 Feet 1,300

FIGURE 5b
Special Status Species within the
Imperial Solar Energy Center West Project

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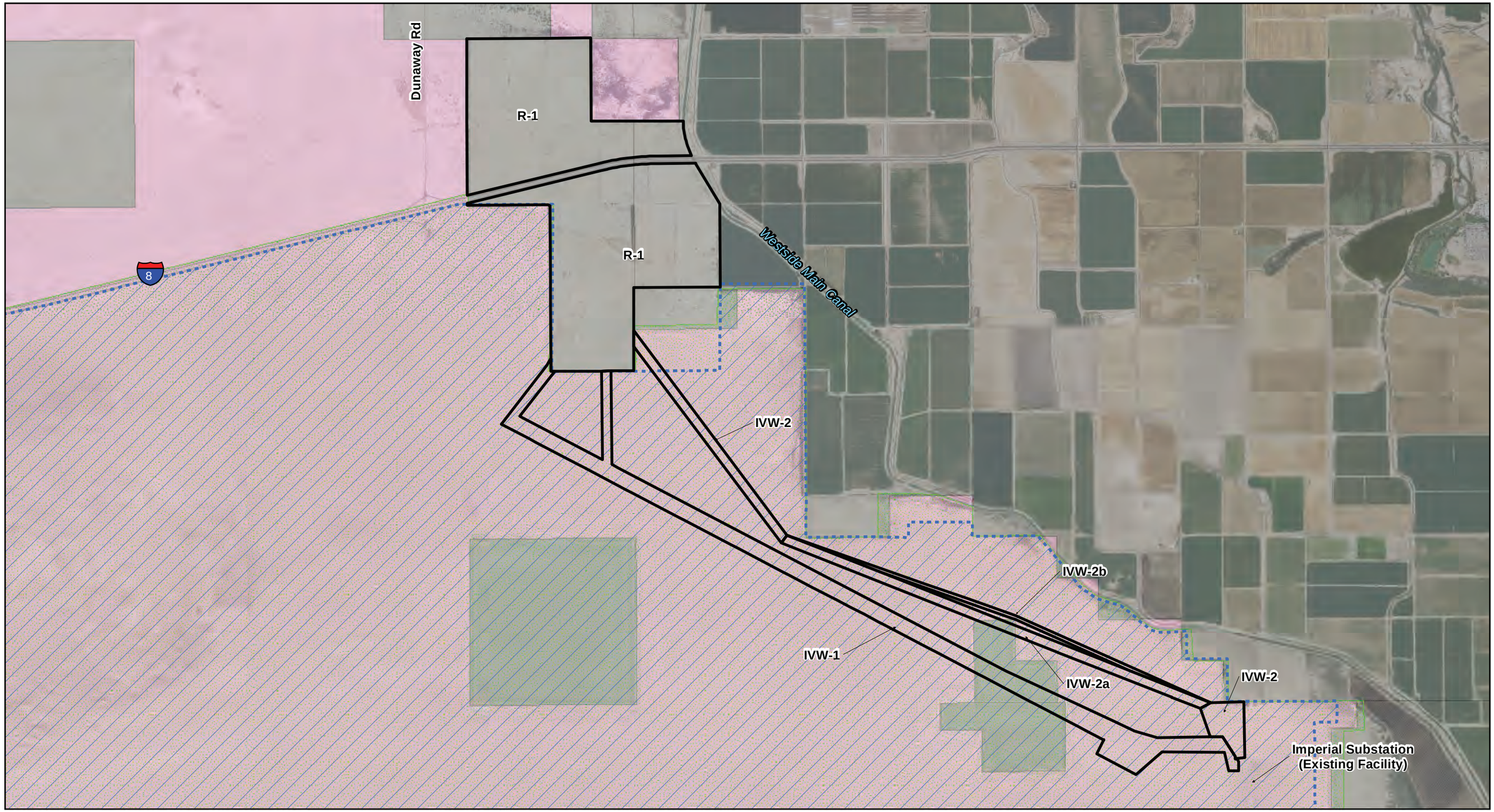
Image Source: CDFG (flown Summer 2009)



Survey Area

Flat-tail Horned Lizard Management Area

Yuha Basin ACEC

Land Ownership

Private Land Ownership

Bureau of Land Management

RECON

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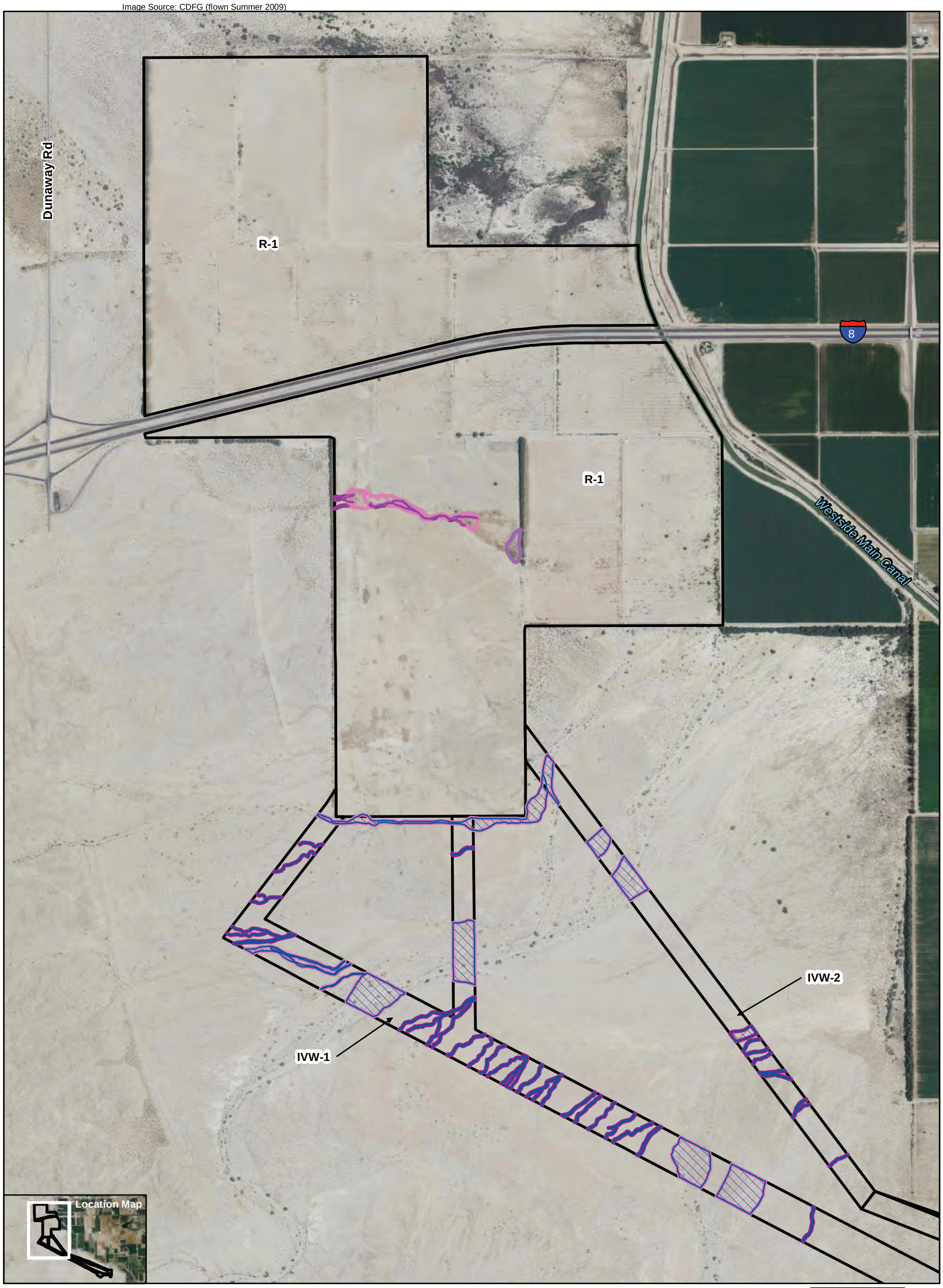
FIGURE 6
Yuha Desert Flat-tail Horned Lizard Management Area
in Relation to the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

ACOE Jurisdictional Resources

Non-wetland water

Potentially Exempt Small Wash

CDFG Jurisdictional Resources

Riparian - Desert Wash Scrub

Riparian - Tamarisk Scrub

Streambed

FIGURE 7a

Jurisdictional Resources within the
Imperial Solar Energy Center West Project

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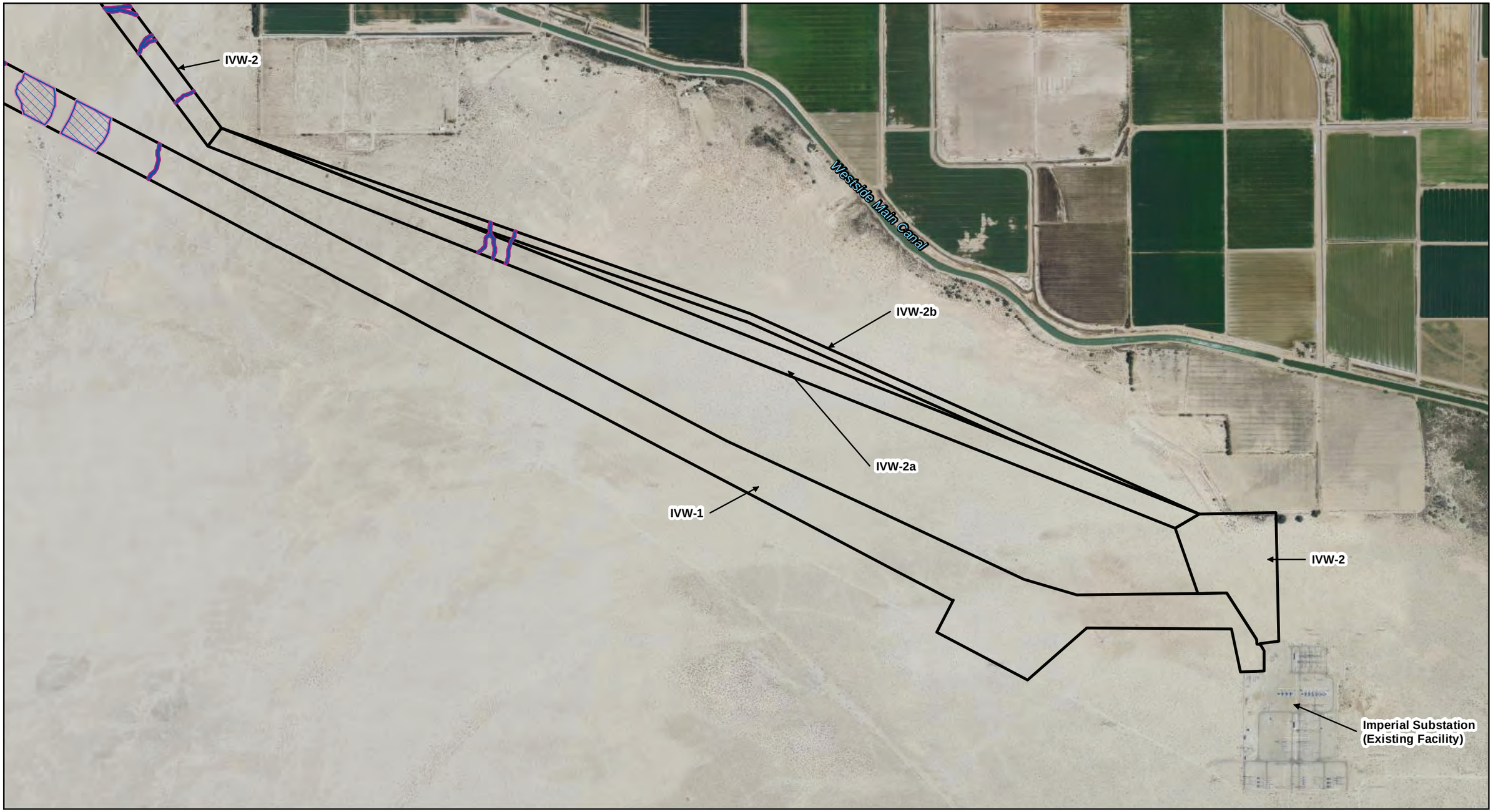
Image Source: CDFG (flown Summer 2009)



Survey Area

ACOE Jurisdictional Resources

Non-wetland water

CDFG Jurisdictional Resources

Riparian - Desert Wash Scrub

Streambed

0 Feet 1,300

RECON

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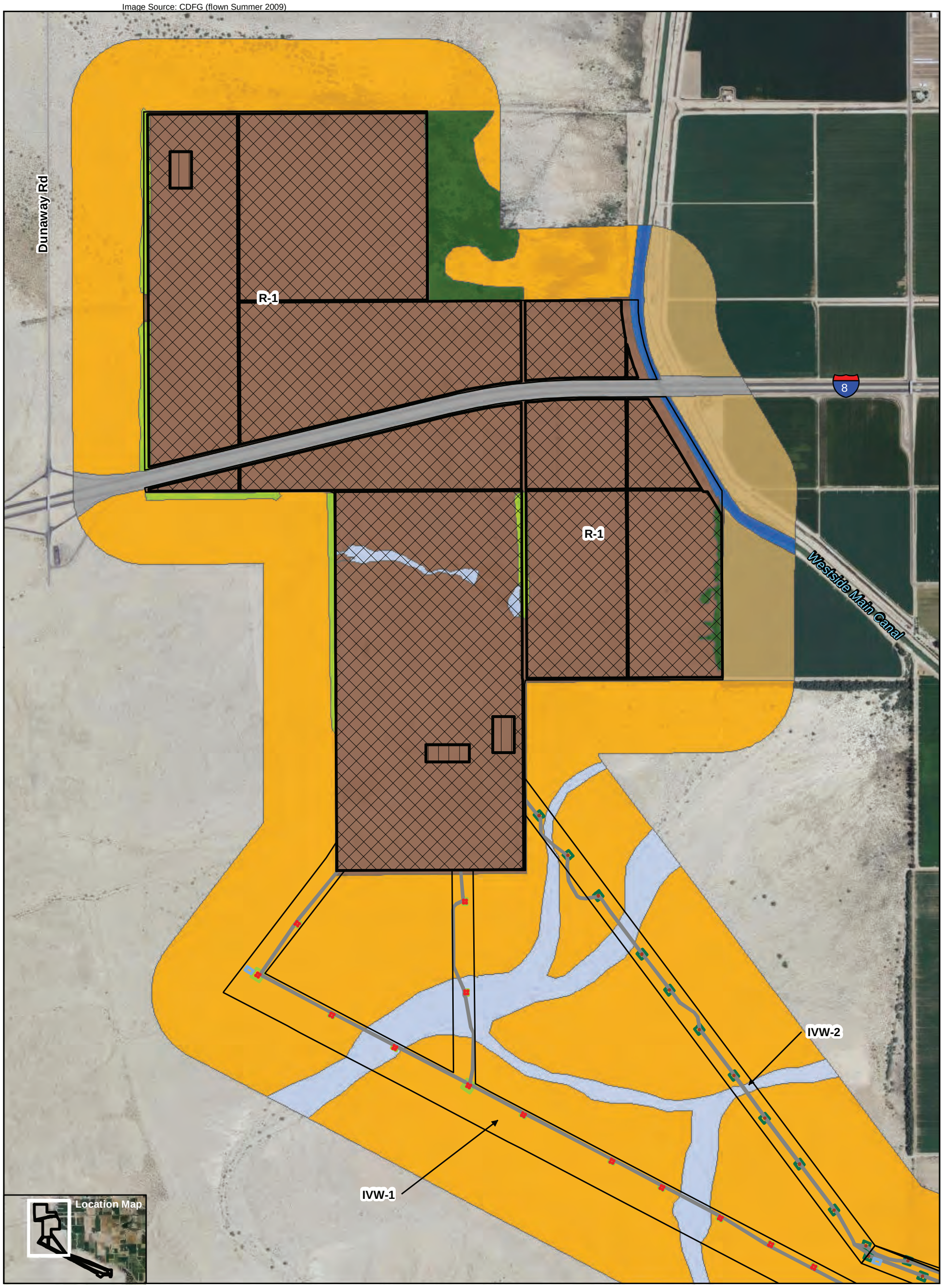
FIGURE 7b

Potential Jurisdictional Resources within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



0 Feet 1,300

Survey Area

Impact Areas
- Permanent Monopole Footing
- Permanent Tower
- Pull Site
- Reduced Solar Field
- Solar Field
- Temporary Monopole Site
- Temporary Tower Site
- Access Road

Vegetation Communities
- Active Agriculture
- Creosote Bush-White Burr Sage Scrub
- Desert Wash
- Developed
- Abandoned Agricultural Fields
- Mesquite Thicket
- Open Water/Irrigation Canal
- Tamarisk Thicket

RECON

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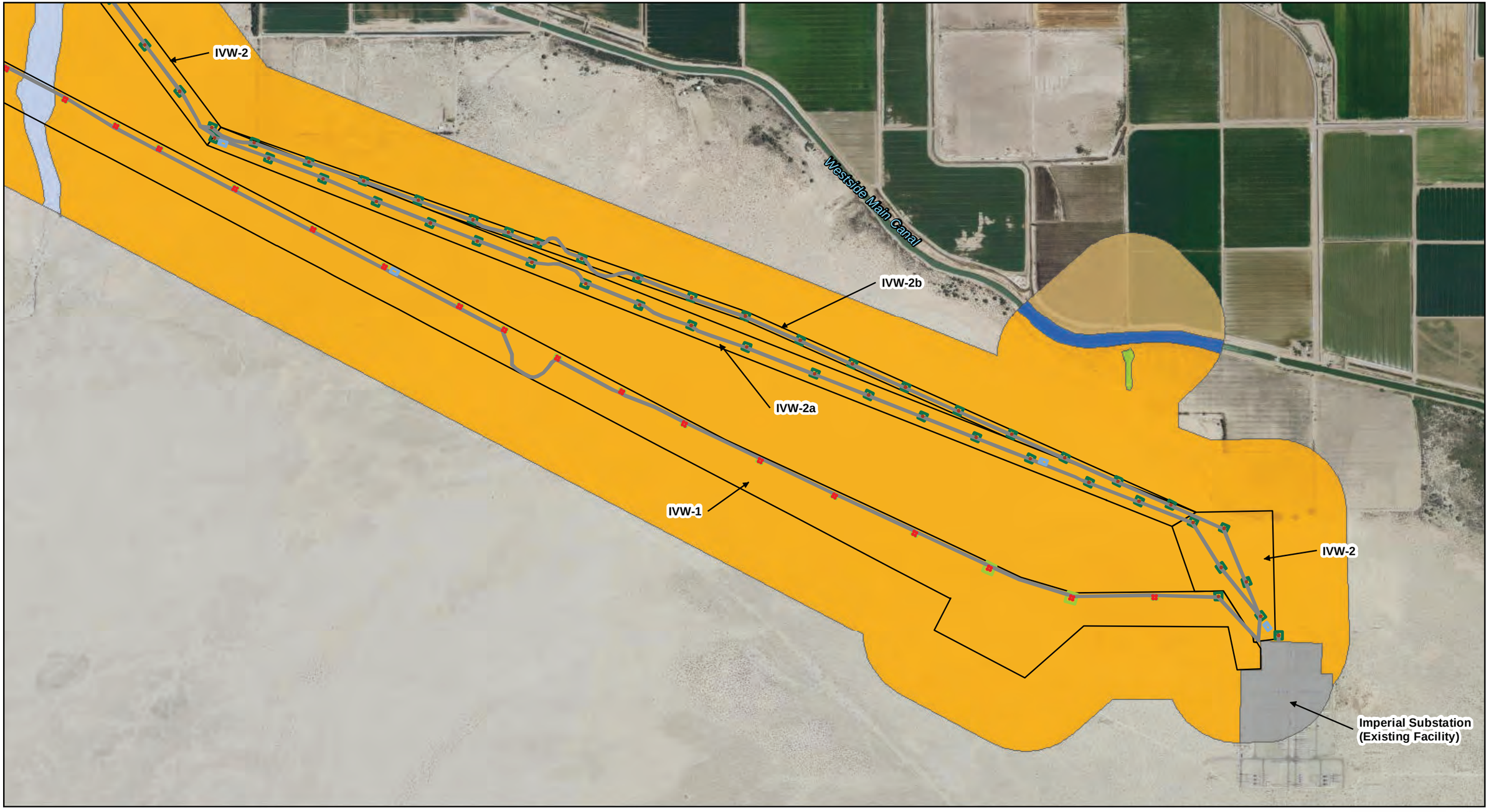
FIGURE 8a

Impacts to Vegetation Communities within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



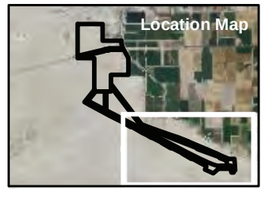
Survey Area

Impact Areas

- Permanent Monopole Footing
- Permanent Tower
- Pull Site
- Temporary Monopole Site
- Temporary Tower Site
- Access Road

Vegetation Communities

- Active Agriculture
- Creosote Bush-White Burr Sage Scrub
- Desert Wash
- Developed
- Open Water/Irrigation Canal
- Tamarisk Thicket



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RECON

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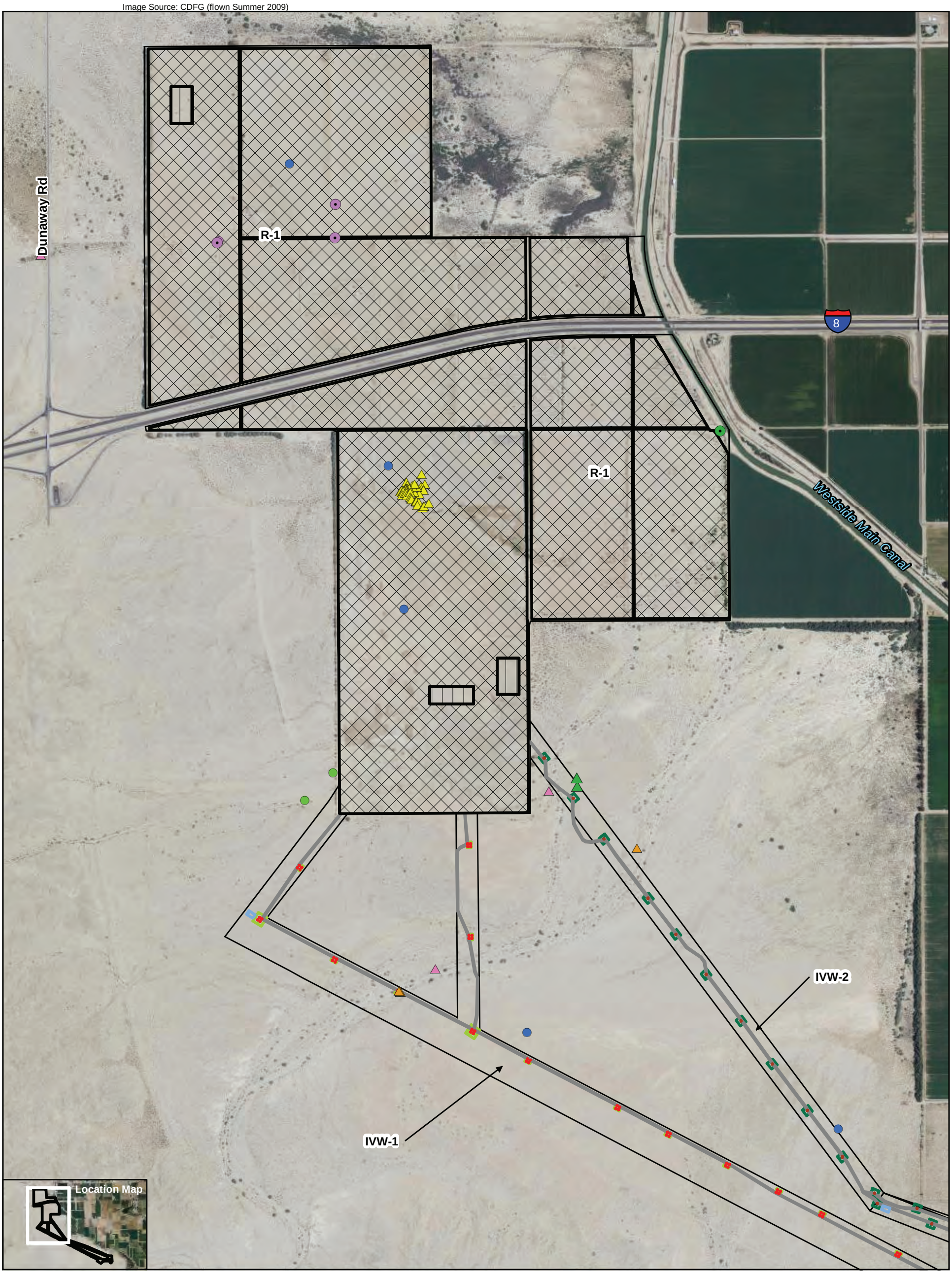
FIGURE 8b
Impacts to Vegetation Communities within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Impact Areas

- Permanent Monopole Footing
- Permanent Tower
- Pull Site
- Reduced Solar Field
- Solar Field
- Temporary Monopole Site
- Temporary Tower Site
- Access Road

Sensitive Plant and Wildlife Species

- Burrowing Owl Individual (*Athene cunicularia hypugea*)
- Burrowing owl pair and active burrow (*Athene cunicularia hypugea*)
- Flat-tail Horned Lizard (*Phrynosoma mcallii*)
- Green Heron Nest (*Butorides virescens*)
- Loggerhead Shrike (*Lanius ludovicianus*)
- Parish's Desert Thorn (*Lycium parishii*)
- Salton Milkvetch (*Astragalus crotolariae*)
- Thurber's Pilostyles (*Pilostyles thurberi*)
- Brown Turbans (*Malperia tenuis*)

0 Feet 1,300

RECON

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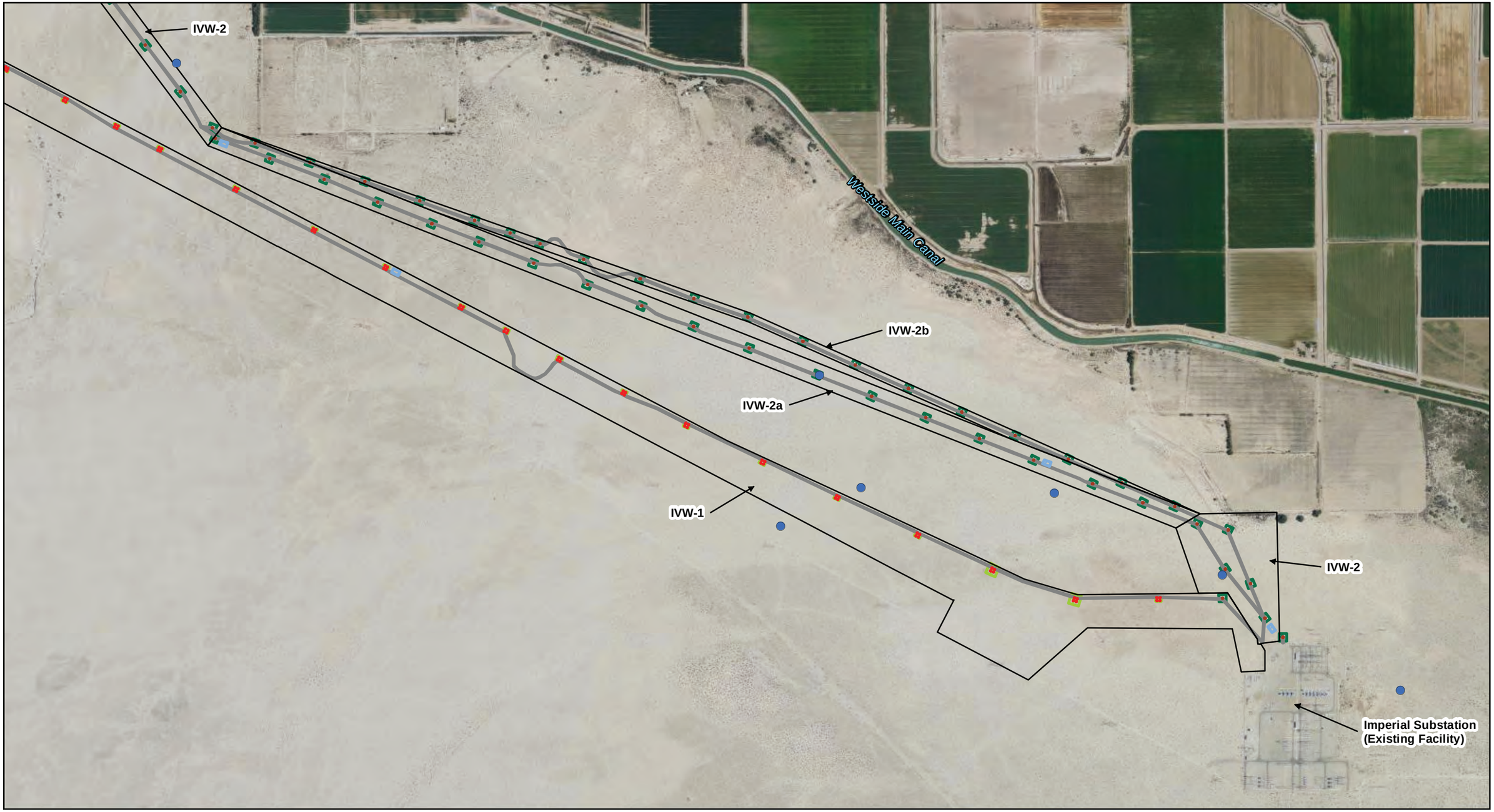
FIGURE 9a

Impacts to Special Status Species within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Impact Areas

Permanent Monopole Footing

Permanent Tower

Pull Site

Temporary Monopole Site

Temporary Tower Site

Access Road

Sensitive Plant and Wildlife Species

Flat-tail Horned Lizard (*Phrynosoma mcallii*)

0 Feet 1,300

RECON

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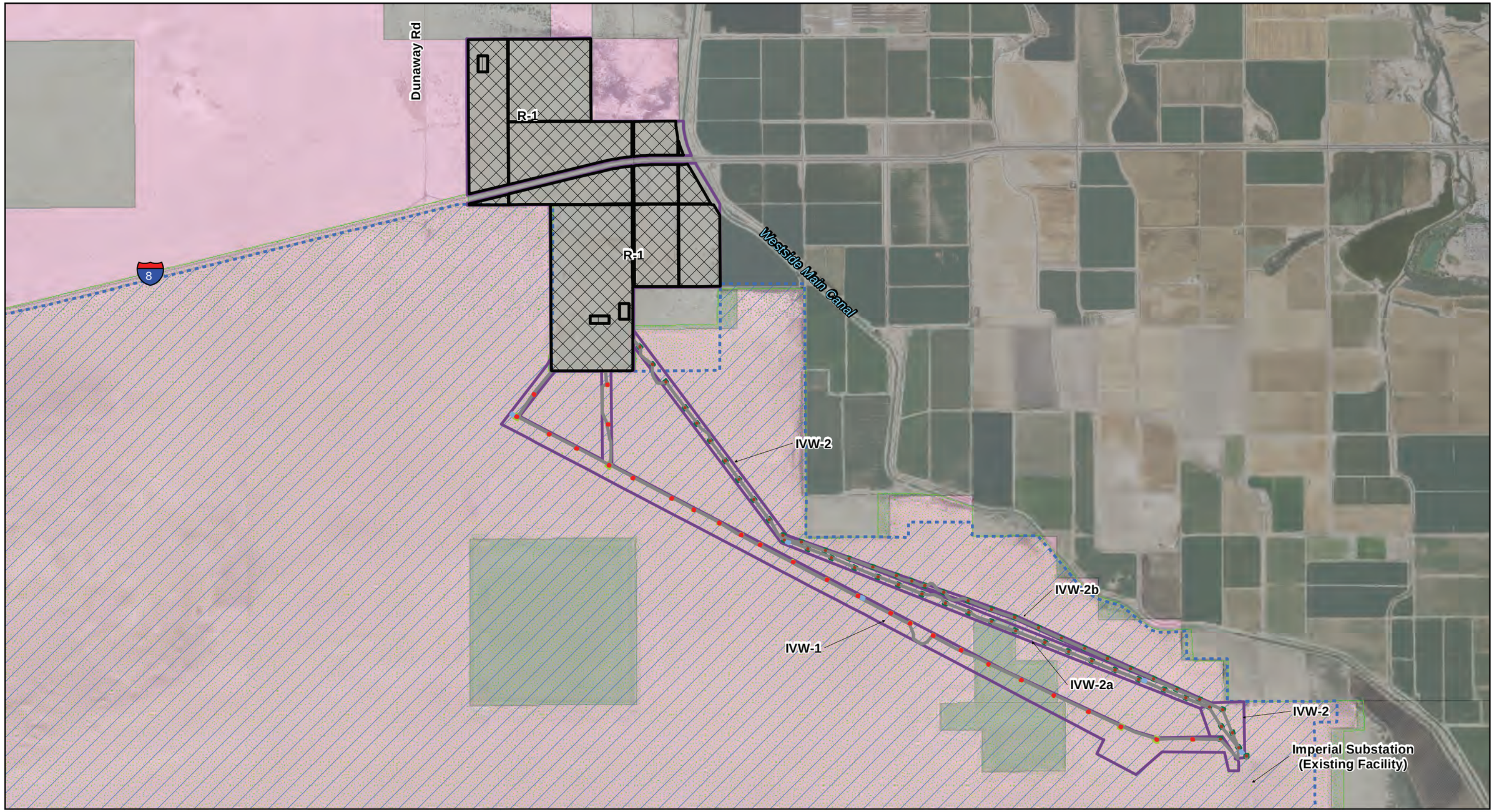
FIGURE 9b

Impacts to Special Status Species within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Impact Areas

Permanent Monopole Footing
Permanent Tower
Pull Site

Reduced Solar Field
Solar Field
Temporary Monopole Site
Temporary Tower Site
Access Road

Flat-tail Horned Lizard Management Area
Yuha Basin ACEC

Land Ownership

Private Land Ownership
Bureau of Land Management

0 Feet 3,000

RECON

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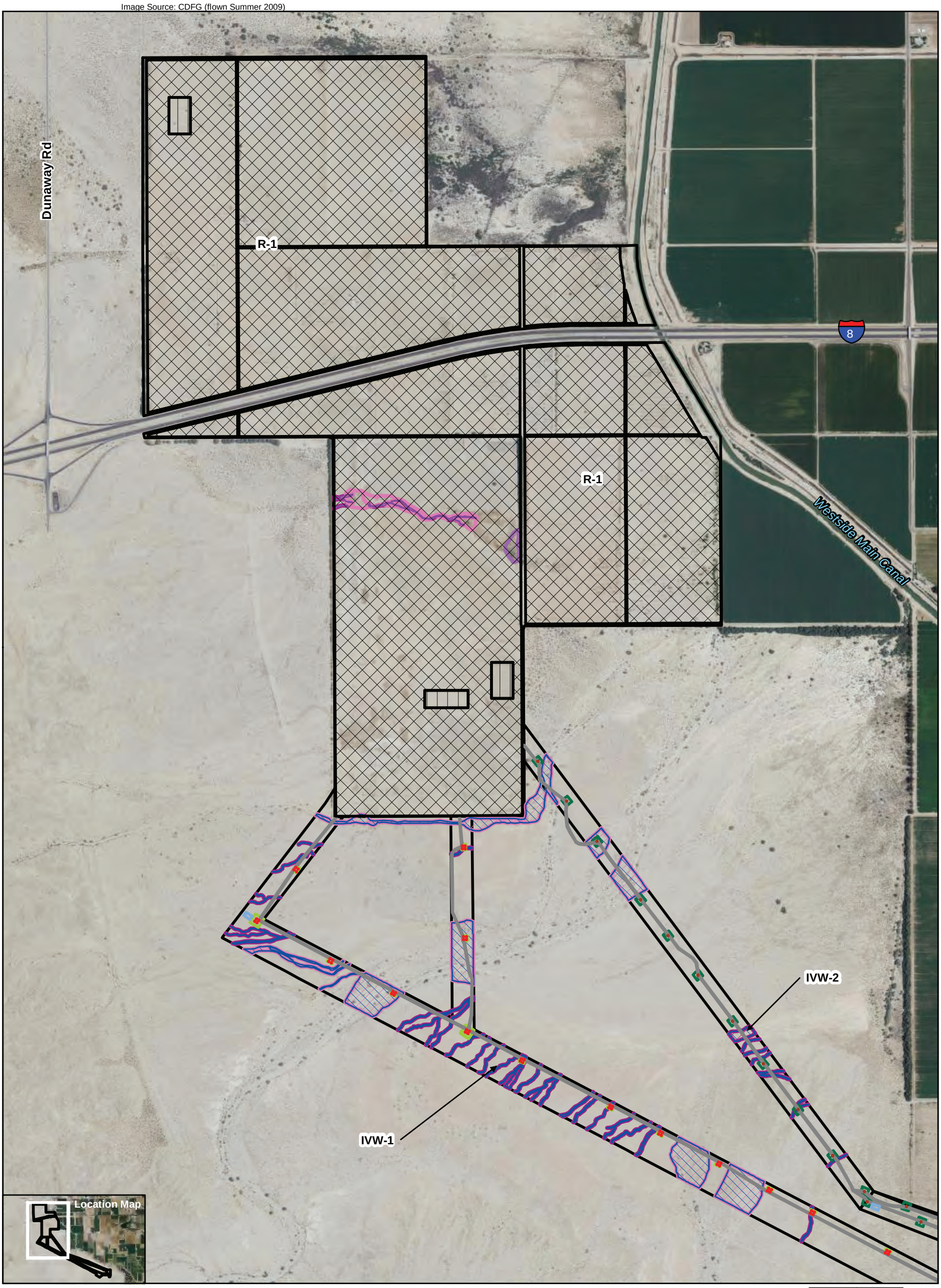
FIGURE 10
Impacts to Yuha Desert Flat-tail Horned Lizard Management Area
in Relation to the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Impact Areas

Permanent Monopole Footing

Permanent Tower

Pull Site

Reduced Solar Field

Solar Field

Temporary Monopole Site

Temporary Tower Site

Access Road

ACOE Jurisdictional Resources

Non-wetland water

Potentially Exempt Small Wash

CDFG Jurisdictional Resources

Riparian - Desert Wash Scrub

Riparian - Tamarisk Scrub

Streambed

RECON

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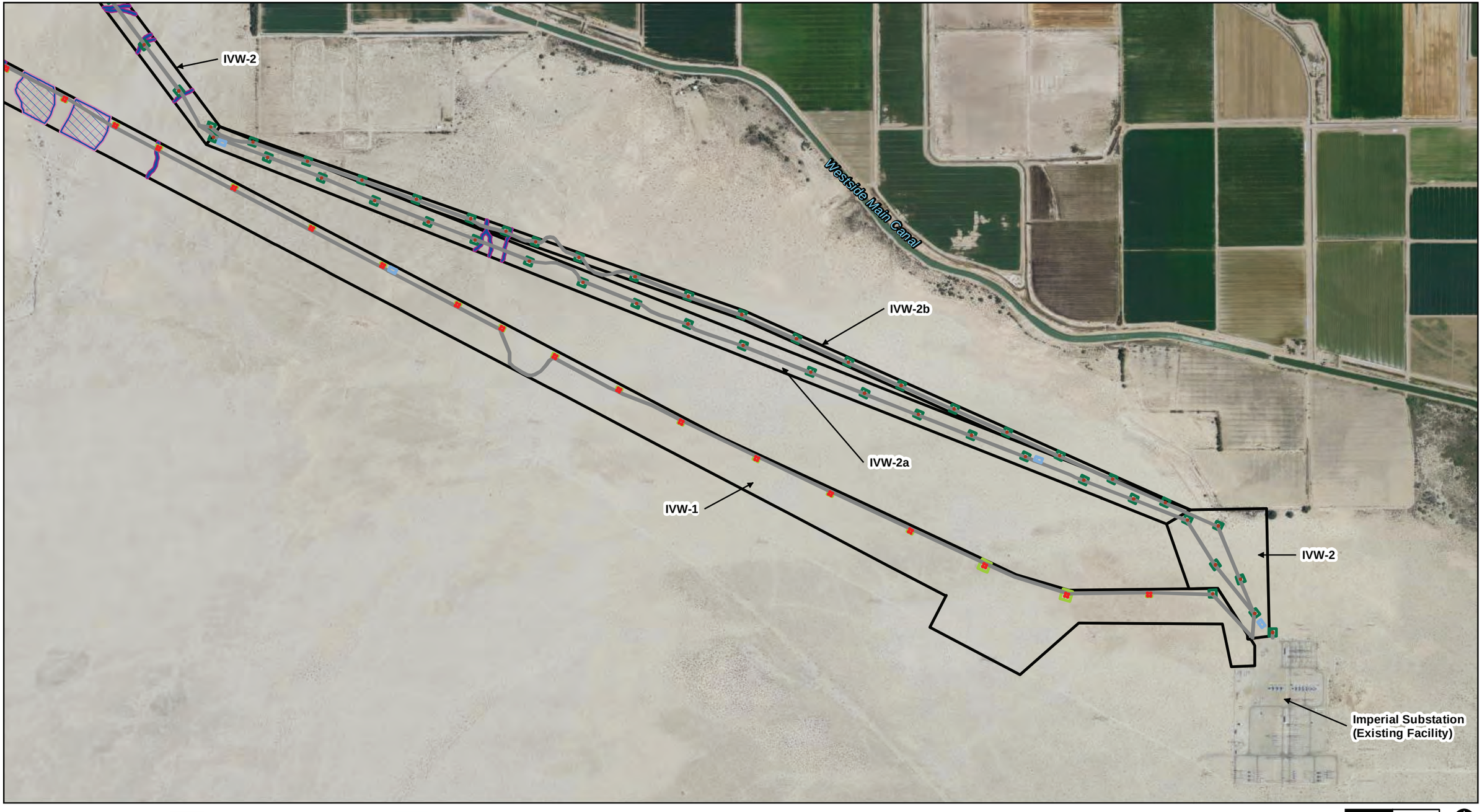
FIGURE 11a

Impacts to Jurisdictional Resources within the Imperial Solar Energy Center West Project

Image Source: CDFG (flown Summer 2009)



Survey Area

Impact Areas

Permanent Monopole Footing

Permanent Tower

Pull Site

Temporary Monopole Site

Temporary Tower Site

Access Road

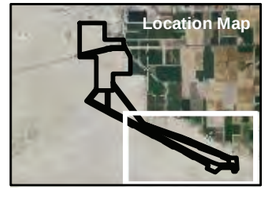
ACOE Jurisdictional Resources

Non-wetland water

CDFG Jurisdictional Resources

Riparian - Desert Wash Scrub

Streambed



0 Feet 1,300

RECON

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FIGURE 11b

Impacts to Jurisdictional Resources within the Imperial Solar Energy Center West Project

ATTACHMENT 2

ATTACHMENT 2
PLANT SPECIES OBSERVED WITHIN ISEC WEST PROJECT SURVEY AREA

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2/2A	IVW-2B
GNETALES							
EPHEDRACEAE	**EPHEDRA FAMILY**						
Ephedra trifurca	three-fork ephedra	FA, CBS	N		X	X	X
ANGIOSPERMS: DICOTS							
AIZOACEAE	**FIG-MARIGOLD FAMILY**						
Mesembryanthemum crystallinum	crystalline ice plant	FA	I	X			
AMARANTHACEAE	**AMARANTH FAMILY**						
Amaranthus palmeri	Palmer's amaranth	AT	N	X			
Tidestromia oblongifolia	honeysweet	AT	N		X	X	
ASTERACEAE	**SUNFLOWER FAMILY**						
Ambrosia dumosa	white burr sage	FA, AG	N	X	X	X	X
Baileya pauciradiata	lax flower	CBS	N		X	X	
Bebbia juncea	sweetbush	DW	N		X	X	
Chaenactis carophoclinia var. *carphoclinia*	pebble pincushion	CBS	N		X	X	
Chaenactis fremontii	desert pincushion flower	CBS	N		X	X	
Chaenactis stevioides	pincushion flower	CBS	N		X	X	X
Encelia farinosa	brittlebush, incienso	FA	N	X			
Encelia frutescens	rayless encelia	DW	N	X	X	X	
Geraea canescens	desert sunflower	FA, CBS	N	X	X	X	X
Hymenoclea salsola	cheese bush	FA, DW	N	X	X		X
Isocoma acradenia var. *eremophila*	alkali goldenbush	FA, CBS	N	X	X	X	X
Lactuca serriola	prickly lettuce	DW	I		X		X
Malacothrix glabrata	desert dandelion	FA, CBS	N	X		X	X
Malperia tenuis	brown turbans	CBS	N			X	
Monoptilon belliodes	desert star	CBS	N		X		
Palafoxia arida var. *arida*	Spanish needles	FA, CBS, DW	N	X	X	X	X
Perityle emoryi	rock daisy	CBS, DW	N	X			
Pluchea sericea	arrow weed	AT	N	X			
Porophyllum gracile	odora	CBS	N		X		
Psathyrotes ramosissima	turtleback	DW	N		X	X	
Rafinesquia neomexicana	desert chickory	CBS, DW	N	X	X	X	

ATTACHMENT 2
PLANT SPECIES OBSERVED WITHIN ISEC WEST SURVEY AREA
(CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2/2A	IVW-2B
ANGIOSPERMS: DICOTS (CONT.)							
ASTERACEAE (CONT.)	**SUNFLOWER FAMILY (CONT.)**						
Sonchus sp.	sow thistle	DW	I	X	X		
Stephanomeria pauciflora	wire lettuce	DW	N		X	X	
BORAGINACEAE	**BORAGE FAMILY**						
Cryptantha angustfolia	narrow-leaved forget-me-not	FA, CBS, DW	N	X	X	X	X
Pectocarya recurvata	comb-bur	FA, CBS, DW	N	X		X	
Tiquilia palmeri	Palmer's tiquilia	CBS, DW	N		X	X	X
Tiquilia plicata	fanleaf crinklemat	CBS, DW	N	X	X	X	X
BRASSICACEAE (CRUCIFERAE)	**MUSTARD FAMILY**						
Brassica tournefortii	Sahara mustard	FA, CBS, DW, AT	I	X	X	X	X
Lepidium lasiocarpum	peppergrass	FA, AT	N	X			
Sisymbrium irio	London rocket	FA, CBS, DW	I	X			
CAPPARACEAE							
Cleomella obtusifolia	Mojave stinkweed	DW	N		X	X	
CARYOPHYLLACEAE	**PINK FAMILY**						
Achyronychia cooperi	frost mat	AG, CBS, DW	N	X	X	X	
CHENOPODIACEAE	**GOOSEFOOT FAMILY**						
Atriplex canescens	fourwing saltbush, shad-scale	AG, CBS, DW	N	X	X	X	X
Atriplex hymenelytra	desert holly	AG, CBS, DW	N	X			
Atriplex lentiformis ssp. *lentiformis*	quailbush	FA	N	X			
Atriplex polycarpa	desert saltbush	AG, CBS, DW	N		X	X	
Chenopodium murale	nettle-leaved goosefoot	FA, CBS	I	X			
Suaeda moquinii	desert seepweed	FA	N			X	
EUPHORBIACEAE	**SPURGE FAMILY**						
Chamaesyce micromera	prostrate spurge	CBS, DW	N		X	X	X
Chamaesyce polycarpa	sand mat	CBS, DW					
Croton californicus var. *mohavensis*	desert croton	DW	N				

ATTACHMENT 2
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2/2A	IVW-2B
ANGIOSPERMS: DICOTS (CONT.)							
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**						
Astragalus crotalariae	Salton milkvetch	DW	N		X		
Astragalus palmeri	Palmer's milkvetch	DW	N		X		
Dalea mollissima	silk dalea	DW	N		X		
Melilotus sp.	sweet clover	FA	I	X			
Parkinsonia aculeata	Mexican palo verde	FA	I	X			
Prosopis glandulosa var. *torreyana*	honey mesquite	FA, CBS, DW	N	X	X	X	
Psorothamnus emoryi	Emory's indigo bush	FA, CBS, DW	N	X	X	X	
Psorothamnus schotti	indigo bush	CBS	N			X	
Psorothamnus spinosus	smoke tree	DW	N	X	X	X	
GERANIACEAE	**GERANIUM FAMILY**						
Erodium cicutarium	redstem filaree	FA	I	X			
HYDROPHYLLACEAE	**WATERLEAF FAMILY**						
Phacelia rotundifolia	round-leaf phacelia	CBS	N	X	X	X	
MALVACEAE	**MALLOW FAMILY**						
Eremalche rotundifolia	desert five-spot	DW	N		X		
Malva parviflora	cheeseweed, little mallow	FA	I	X			
Sphaeralcea ambigua	globemallow	FA, CBS, DW	N	X	X		
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**						
Abronia villosa var. *vilosa*	desert sand verbena	CBS, DW	N		X	X	X
Allionia incarnata	trailing windmills	DW	N	X			
ONAGRACEAE	**EVENING-PRIMROSE FAMILY**						
Camissonia boothii	woody bottle washer	CBS, DW	N		X	X	X
Camissonia claviformis spp. *peirsonii*	Peirson's browneyes	FA, CBS, DW	N	X	X	X	X
Oenothera deltoides	dune primrose	CBS, DW	N		X	X	X
OROBANCHACEAE	**BROOM-RAPE FAMILY**						
Orobanche cooperi	broom-rape	DW	N		X	X	

ATTACHMENT 2
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2/2A	IVW-2B
ANGIOSPERMS: DICOTS (CONT.)							
PLANTAGINACEAE	**PLANTAIN FAMILY**						
Plantago ovata	Indian wheat	FA, CBS, DW	N	X	X	X	X
POLEMONIACEAE	**PHLOX FAMILY**						
Langloisia setosissima var. setosissima	langloisia	CBS	N		X	X	
POLYGONACEAE	**BUCKWHEAT FAMILY**						
Chorizanthe brevicornu	brittle spineflower	CBS	N		X		
Chorizanthe corrugata	wrinkled spineflower	CBS	N			X	
Chorizanthe rigida	rigid chorizanthe	CBS	N	X	X	X	X
Eriogonum deflexum	skeleton weed	CBS, DW	N		X	X	
Eriogonum deserticola	dune buckwheat	CBS, DW	N		X	X	
Eriogonum inflatum	desert trumpet	CBS, DW	N			X	
Eriogonum thomasii	Thomas's buckwheat	CBS, DW	N		X	X	
PORTULACACEAE	**PURSLANE FAMILY**						
Calandrinia ambigua	dead man's fingers	FA, CBS	N		X	X	
RAFFLESIACEAE	**RAFFLESIA FAMILY**						
Pilostyles thurberi	Thurber's pilostyles	FA, DW	N	X			
RESEDACEAE	**MIGNONETTE FAMILY**						
Oligomeris linifolia	narrowleaf oligomeris	FA, CBS, DW	N	X	X	X	X
SOLANACEAE	**NIGHTSHADE FAMILY**						
Datura wrightii	Jimson weed, thorn-apple	FA	N	X			
Lycium parishii / L. brevipes	Parish's desert-thorn, Baja desert-thorn	DW	N		X	X	
TAMARICACEAE	**TAMARISK FAMILY**						
Tamarix aphylla	athel	TT	I	X			
Tamarix ramosissima	salt cedar	FA, DW, TT	I	X	X	X	
ZYGOPHYLLACEAE	**CALTROP FAMILY**						
Larrea tridentata	creosote bush	FA, CBS, DW	N	X	X	X	X

ATTACHMENT 2
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2/2A	IVW-2B
ANGIOSPERMS: MONOCOTS							
LILIACEAE	**LILY FAMILY**						
Hesperocaulis undulata	desert lily	DW	N		X	X	
POACEAE (GRAMINEAE)	**GRASS FAMILY**						
Cynodon dactylon	Bermuda grass	AT	I	X			
Pleuraphis [=Hilaria] *rigida*	big galleta grass	DW	N	X	X	X	
Polypogon monspeliensis	rabbit foot grass	FA	I	X			
Schismus barbatus	Mediterranean grass	FA, CBS, DW	I	X	X	X	X

HABITATS
AG = Agriculture
AT = Arrow-weed thicket
CBS = Creosote bush–white burr sage scrub
DW = Desert wash
FA = Fallow Agriculture
MT = Mesquite thicket
OW = Open water
TT = Tamarisk thicket

ORIGIN
N = Native to locality
I = Introduced species from outside locality

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ATTACHMENT 3

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
INVERTEBRATES (Nomenclature from Eriksen and Belk 1999; Milne and Milne 1980; Mattoni 1990; and Opler and Wright 1999)							
PIERIDAE	**WHITES & SULPHURS**						
Pieris rapae	cabbage white	FA, CBS, DW	C	O	O	O	O
LYCAENIDAE	**BLUES, COPPERS, & HAIRSTREAKS**						
Brephidium exile	western pygmy blue	FA, CBS, DW	C	O	O	O	O
Icaricia acmon acmon	acmon blue	FA	U	O			
NYMPHALIDAE	**BRUSH-FOOTED BUTTERFLIES**						
Vanessa cardui	painted lady	FA, CBS, DW	C	O	O	O	O
FORMICIDAE	**ANTS**						
Pogonomyrmex spp.	harvester ants	FA, CBS	C	O	O	O	O
SCORPIONIDAE	**SCORPIONS**						
Centruroides exilicauda	bark scorpion	CBS	F		O		
THERAPHOSIDAE	**TARANTULAS**						
Aphonopelma chalcodes	*desert tarantula*	FA	U	B		O	O

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
REPTILES (Nomenclature from Crother 2001 and Crother et al. 2003)							
IGUANIDAE	**IGUANID LIZARDS**						
Dipsosaurus dorsalis dorsalis	northern desert iguana	FA, CBS	C	O	O	O	O
PHRYNOSOMATIDAE	**PHRYNOSOMATID LIZARDS**						
Callisaurus draconoides rhodostictus	common zebra-tailed lizard	FA, CBS	C	O	O	O	O
Phrynosoma mcallii	flat-tailed horned lizard	FA, CBS	U	O	O	O	O
Uta stansburiana	common side-blotched lizard	FA, CBS	C	O			
TEIIDAE	**WHIPTAIL LIZARDS**						
Aspidoscelis tigris tigris	Great Basin tiger whiptail	FA, CBS	F	O	O	O	O
COLUBRIDAE	**COLUBRID SNAKES**						
Chionactis occipitalis	western shovel-nosed snake	CBS	U	O	O	O	
CROTALIDAE	**RATTLESNAKES**						
Crotalus cerastes	Sidewinder rattlesnake	CBS, FA	U	O	O	O	
BIRDS (Nomenclature from American Ornithologists' Union 1998 and Unitt 2004)							
ODONTOPHORIDAE	**NEW WORLD QUAIL**						
Callipepla gambelii gambelii	Gambel's quail	FA, CBS, AT, DW, MT, TT	C/ Y	O	O	O	
ARDEIDAE	**HERONS & BITTERNS**						
Bubulcus ibis ibis	cattle egret	OW	F/ Y		O		
Butorides virescens	green heron	OW	U/ S	O			

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
CATHARTIDAE	**NEW WORLD VULTURES**						
Cathartes aura	turkey vulture	F	F/ M, S	O	O	O	
ACCIPITRIDAE	**HAWKS, KITES, & EAGLES**						
Buteo jamaicensis	red-tailed hawk	CBS	F/ Y			O	O
Circus cyaneus hudsonius	northern harrier	F	U/ Y				
FALCONIDAE	**FALCONS & CARACARAS**						
Falco sparverius sparverius	American kestrel	CBS	U/ Y	O	O	O	O
CHARADRIIDAE	**LAPWINGS & PLOVERS**						
Charadrius vociferus vociferus	killdeer	FA	U/ Y	O	O	O	
LARIDAE	**GULLS, TERNS, & SKIMMERS**						
Larus delawarensis	ring-billed gull	F	U		O		
COLUMBIDAE	**PIGEONS & DOVES**						
Columba livia	rock dove (I)	CBS	F/ Y	O	O	O	
Columbina passerina pallescens	common ground dove	FA	F/ Y	O	O		
Scardafella inca	inca dove	CBS	U/ Y			O	
Streptopelia decaocto	Eurasian collared dove	FA, CBS	F/ Y	O	O	O	
Zenaida asiatica mearnsi	white-winged dove	CBS, TT	C/ Y			O	
Zenaida macroura marginella	mourning dove	FA, CBS, AT, DW, MT, TT	C/ Y	O	O	O	O
CUCULIDAE	**CUCKOOS & ROADRUNNERS**						
Geococcyx californianus	greater roadrunner	FA, CBS	U/ Y	O			

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
STRIGIDAE	**TYPICAL OWLS**						
Athene cunicularia hypugaea	western burrowing owl	FA	U/ Y, W	O			
Bubo virginianus	great horned owl	TT	U/ Y	O			
CAPRIMULGIDAE	**GOATSUCKERS**						
Chordeiles acutipennis texensis	lesser nighthawk	CBS	F/ S	O	O	O	O
TROCHILIDAE	**HUMMINGBIRDS**						
Calypte anna	Anna's hummingbird	MT	U/ Y	O			
Calypte costae	Costa's hummingbird	DW	U/ S		O		
TYRANNIDAE	**TYRANT FLYCATCHERS**						
Empidonax traillii	willow flycatcher	MT, TT	U/ S	O			
Myiarchus cinerascens cinerascens	ash-throated flycatcher	MT	/ S	O			
Sayornis nigricans semiatra	black phoebe	FA, DW, AT	F/ Y	O	O	O	
Sayornis saya	Say's phoebe	CBS, DW	F/ W	O	O	O	O
Tyrannus verticalis	western kingbird	DW	F/ S	O	O	O	O
LANIIDAE	**SHRIKES**						
Lanius ludovicianus	loggerhead shrike	DW, TT, MT	F/ S	O	O	O	O
CORVIDAE	**CROWS, JAYS, & MAGPIES**						
Corvus brachyrhynchos hesperis	American crow	FA, TT	U/ Y	O			
Corvus corax clarionensis	common raven	F	F/ Y	O	O	O	O
ALAUDIDAE	**LARKS**						

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
Eremophila alpestris	horned lark	FA, CBS, TT, DW	C/ Y	O	O	O	O
HIRUNDINIDAE	**SWALLOWS**						
Petrochelidon pyrrhonota tachina	cliff swallow	OW, AT, F	F/ S	O		O	
Stelgidopteryx serripennis	northern rough-winged swallow	OW, AT	C/ S	O		O	O
REMIZIDAE	**VERDIN**						
Auriparus flaviceps acaciarum	verdin	FA, DW	C/ Y	O	O	O	
MIMIDAE	**MOCKINGBIRDS & THRASHERS**						
Mimus polyglottos polyglottos	northern mockingbird	MT, TT	F/ Y	O			
Toxostoma crissale	crissal thrasher	MT	U/ Y	O			
Toxostoma lecontei lecontei	LeConte's thrasher	MT	U/ Y	O		O	
STURNIDAE	**STARLINGS & MYNAS**						
Sturnus vulgaris	European starling (I)	F	F/ Y		O	O	
SYLVIIDAE	**GNATCATCHERS**						
Polioptila caerulea	blue-gray gnatcatcher	DW	F/ Y	O	O		
Polioptila melanura	black-tailed gnatcatcher	DW	F/ Y	O		O	
PTILOGONATIDAE	**SILKY FLYCATCHERS**						
Phainopepla nitens lepida	phainopepla	DW	U/ Y			O	
PARULIDAE	**WOOD WARBLERS**						
Dendroica coronata	yellow-rumped warbler	DW, MT	C/ W	O	O	O	

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
EMBERIZIDAE	**EMBERIZIDS**						
Melospiza melodia	song sparrow	CBS	U/ Y				
Pipilo maculatus	spotted towhee	MT	U/ W	O			
Pipilo aberti	Abert's towhee	CBS, TT	F/Y	O	O	O	O
Zonotrichia leucophrys	white-crowned sparrow	FA, CBS, MT, AT	C/ W	O	O	O	
ICTERIDAE	**BLACKBIRDS & NEW WORLD ORIOLES**						
Agelaius phoeniceus	red-winged blackbird	AT, OW	C/ Y	O	O	O	O
Icterus bullockii	Bullock's oriole	TT	U/ Y	O			
Molothrus ater	brown-headed cowbird	MT	/ Y	O		O	O
Quiscalus mexicanus	great-tailed grackle	AT	/ Y	O			
Sturnella neglecta	western meadowlark	RA	/ Y	O	O	O	O
Xanthocephalus xanthocephalus	yellow-headed blackbird	TT, OW	/ W	O		O	
FRINGILLIDAE	**FINCHES**						
Carduelis psaltria hesperophilus	lesser goldfinch	DW, CBS, MT	F/ Y	O	O	O	
Carpodacus mexicanus frontalis	house finch	FA, CBS	C/ Y	O	O	O	
PASSERIDAE	**OLD WORLD SPARROWS**						
Passer domesticus	house sparrow (I)	CBS	U/ Y		O		
MAMMALS (Nomenclature from Baker et al. 2003)							

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2/ IVW-2A	IVW-2B
MOLOSSIDAE	**FREE-TAILED BATS**						
Tadarida brasiliensis	Mexican free-tailed bat	F, OW	F	O	O	O	O
LEPORIDAE	**RABBITS & HARES**						
Lepus californicus deserticola	desert black-tailed jackrabbit	FA, CBS	F	O	O	O	O
Sylvilagus audubonii	desert cottontail	FA, CBS	C	O	O	O	
SCIURIDAE	**SQUIRRELS & CHIPMUNKS**						
Spermophilus tereticaudus	round-tailed ground squirrel	FA, CBS	C	B	O	B,O	O
HETEROMYIDAE	**POCKET MICE & KANGAROO RATS**						
Dipodomys sp.	kangaroo rat	FA, CBS	C	B, S, T	B, S, T	B, S, T	
Dipodomys deserti deserti	desert kangaroo rat	CBS	C		O		
MURIDAE	**OLD WORLD MICE & RATS (I)**						
Peromyscus sp.	mouse	FA, CBS	C	B, S	B, S	B, S	
CANIDAE	**CANIDS**						
Canis latrans	coyote	FA, CBS	U	T	T	O	
MUSTELIDAE	**WEASELS, OTTERS, & BADGERS**						
Taxidea taxus	American badger	CBS	U	T			
CERVIDAE	**DEER**						
Odocoileus hemionus	mule deer	CBS	U		S		

(I) = Introduced species

HABITATS
AG = Agriculture
AT = Arrow-weed thicket
CBS = Creosote bush – white burr sage scrub

ABUNDANCE (based on Garrett and Dunn 1981)
C = Common to abundant; almost always encountered in suitable habitat, usually in moderate to large numbers
F = Fairly common; usually encountered in suitable habitat, generally not in large numbers

ATTACHMENT 3
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN ISEC WEST PROJECT SURVEY AREA
(CONT.)

DW = Desert wash
F = Flying overhead
FA = Fallow Agriculture (Upland Mustard)
MT = Mesquite thicket
OW = Open water (Westside Canal)
TT = Tamarisk thicket

U = Uncommon; occurs in small numbers or only locally

SEASONALITY (birds only)
A = Accidental; species not known to occur under normal conditions; may be an off-course migrant
M = Migrant; uses site for brief periods of time, primarily during spring and fall months
S = Spring/summer resident; probable breeder on-site or in vicinity
T = Transient; uses site regularly but unlikely to breed on-site
V = Rare vagrant
W = Winter visitor; does not breed locally
Y = Year-round resident; probable breeder on-site or in vicinity

EVIDENCE OF OCCURRENCE
B = Burrow
C = Carcass/remains
D = Den site
O = Observed
S = Scat
T = Track
V = Vocalization

Imperial Solar Energy Center West

Appendix I-1a

Mountain Plover Amendment to the Biological Technical Report

Prepared by Recon Environmental, Inc.

May 26, 2011

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May 26, 2011

Mr. Steve Johnson
CSOLAR Development, LLC
1044 N. 115th Street, Suite 400
Omaha, NE 68154

Reference: Mountain Plover Amendment to the Biological Assessment for the Imperial Solar Energy Center West Project (RECON Number 5726B)

Dear Mr. Johnson:

This letter serves as an amendment to the *Biological Assessment for the Imperial Solar Energy Center West Project*, prepared by RECON in December 2010 and submitted to the El Centro Field Office of the Bureau of Land Management (BLM) on behalf of CSOLAR.

1.0 INTRODUCTION

CSOLAR Development, LLC proposes to construct a 250-megawatt photovoltaic solar facility and associated transmission lines west of Calexico, California, within the California Desert Conservation Area. Projects proposed on public lands in the California Desert Conservation Area must comply with the requirements of Section 7(a) of the Endangered Species Act (ESA). The BLM submitted the Biological Assessment (BA) for the proposed Imperial Valley Solar Energy Center (ISEC) West Project to the U.S. Fish and Wildlife Service (USFWS) in December 2010 to initiate ESA Section 7 formal consultation for three federally listed species and one proposed for listing, flat-tailed horned lizard (*Phrynosoma mcallii)*. In January, 2011, the USFWS determined that the mountain plover (*Charadrius montanus*), a species proposed for federal listing, may winter in the project area and additional information was required to complete conferencing requirements for this species. This addendum to the December 2010 BA has been prepared to include existing conditions and impact analysis for the mountain plover.

2.0 PROJECT DESCRIPTION

2.1 Location

The proposed Imperial Solar Energy Center West Project is located approximately 8 miles west of El Centro in Imperial County, California (Figures 1 and 2). The proposed project footprint includes a 1,071.5-acre solar field (R-1) that is bisected by Interstate 8 and a proposed 230-kilovolt transmission line route running from the southeast corner of the solar filed to the Imperial Valley Substation (Figure 3).

2.2 Action Area

Under the implementing regulations for Section 7(a)(2) of the federal ESA, the action area is defined as the reach of direct and indirect effects, as well as the analysis area for this opinion. This includes off-site use areas such as access roads.

The general action area for the ISEC West Project includes the project components and a 1,000-foot buffer surrounding those project components, as shown on Figure 3, in order to provide a thorough discussion regarding project effects both within and adjacent to the project footprint. Additionally, the action area specific to mountain plover is expanded to include the entire agricultural complex surrounding El Centro, spanning from the U.S.–Mexico Border north to the Salton Sea (Figure 4), in order to adequately discuss the agricultural complex surrounding El Centro as winter foraging habitat for this species.

2.3 Proposed Action

The Proposed Action consists of two primary components: 1) the construction and operation of the ISEC West photovoltaic (PV; solar power) facility and its associated access roads and 2) the construction and operation of the electrical transmission lines that would connect from the solar power facility to the existing Imperial Valley Substation. The electricity generation process associated with the Proposed Action would utilize solar PV technology to convert sunlight directly into electricity. As part of the project, the PV facility would interconnect to the utility grid at the 230 kV side of the Imperial Valley Substation via an approximately 5-mile-long transmission line. The proposed right-of-way for the electrical transmission line corridor would be 120 feet wide. The BA for the ISEC West Project contains additional details of the solar facility and transmission components.

Estimated Disturbance Area

As shown in Table 1, a total of 1,051.9 acres of abandoned agricultural fields are expected to be impacted during construction of the Proposed Action.

TABLE 1
PROPOSED IMPACTS FOR ISEC WEST PROJECT

Project Component	Solar Field Impact (acres)	Transmission Line Impacts (acres)	Total (acres)
Permanent Impacts			
Solar Field (R-1)			
Desert Wash (DW)	6.7		6.7
Mesquite Thicket (MT	5.7		5.7
Tamarisk Thicket (TT)	7.2		7.2
Abandoned Agriculture (AA)	1,051.9		1,051.9
Solar Field Total	1,071.5		1,071.5
Transmission Line (IVW-2 +IVW-2B)			
---Access roads			
Creosote Bush-White Burr Sage Scrub (CBS)		6.6	6.6
DW		0.2	0.2
Access Road Total		6.8	6.8
--Monopole footings		<0.1	<0.1
CBS			
Transmission Line Total		6.8	6.8
Permanent Impacts Total	*1,071.5*	*6.8*	*1,078.3*

TABLE 1
PROPOSED IMPACTS FOR ISEC WEST PROJECT (CONT.)

Project Component	Solar Field Impact (acres)	Transmission Line Impacts (acres)	Total (acres)
Temporary Impacts			
Transmission Line (IVW-2 +IVW-2B)			
--Pullsite—CBS		0.1	0.1
--Monopole work areas—CBS		6.8	6.8
Temporary Impacts Total		*6.9*	*6.9*
Total Project Impacts	**1,071.5**	**13.7**	**1,085.2**

Resource Avoidance and Impact Minimization Measures

The Proposed Action includes minimization and mitigation measures designed to avoid and minimize direct and indirect harm or injury of federally listed and proposed listed species and their habitat, and to compensate for unavoidable direct and indirect effects resulting from project construction and operations and maintenance (O&M).

1. Speed limits along all transmission access roads and within the solar field should not exceed 15 miles per hour during construction and O&M. Transmission access for O&M activities shall be kept to the minimum necessary for operations. This limited access is designed to prevent wildlife mortality.

2. Prior to groundbreaking activities, an Avian and Bat Protection Plan (ABPP) will be prepared and approved by BLM and USFWS, which will outline conservation measures for construction and O&M activities that might reduce potential impacts to bird populations. The conservation measures in the ABPP will include:

    - Minimizing disturbance to vegetation to the extent practicable.
    - Clearing vegetation outside of the breeding season. If construction occurs between February 1 and September 15, a qualified biologist shall conduct a pre-construction clearance survey for nesting birds in suitable nesting habitat that occurs within the proposed area of impact. Pre-construction nesting surveys will identify any active migratory birds' (and other sensitive non-migratory birds') nests. Direct impact to any active migratory bird nest should be avoided.
    - Minimize wildfire potential.
    - Minimize activities that attract prey and predators.
    - Control of non-native plants.
    - Apply Avian Power Line Interaction Committee design guidelines for overhead utilities (APLIC 2006) by incorporating recommended or other methods that enhance the visibility of utility lines to avian species.
    - Preparation of a Raven Control Plan that avoids introducing water and food resources in the area surrounding the solar field.
    - Minimize noise.
    - Minimize use of outdoor lighting.
    - Implement post-construction avian monitoring that will incorporate a Wildlife Mortality Reporting Program.

3. A Wildlife Mortality Reporting Program will be prepared and approved by BLM prior to groundbreaking activities and implemented during O&M of the solar facility. This plan calls for identification and reporting of any dead or injured animals observed by personnel conducting O&M activities within the solar field and along the transmission line. An appropriate reporting format for dead or injured wildlife observed within the solar field and along the transmission line will be developed in coordination with the USFWS and the BLM. In addition, reporting of any dead or injured avian species found along the transmission line will follow the existing USFWS Bird Fatality/Injury Reporting Program (https:// birdreport.fws.gov/).

4. Prior to ground-disturbing activities, an individual shall be designated and approved by the USFWS and BLM as a Designated Biologist* (i.e., field contact representative). A Designated Biologist will be designated for the period during which on-going construction, and post-construction monitoring and reporting by an approved biologist are required, such as annual reporting on habitat restoration. Biological Monitor(s) will assist the Designated Biologist in conducting pre-construction surveys and monitoring mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities.

5. Prior to project initiation, a Worker Education Awareness Program (WEAP) will be developed and implemented, and will be available in both English and Spanish. Wallet-sized cards summarizing this information will be provided to all construction, operation, and maintenance personnel. The education program will include the following aspects:

   a. Biology and status of the sensitive species in the vicinity.

   b. Protection measures designed to reduce potential impacts to the species.

   c. Function of flagging designating authorized work areas.

   d. Driving procedures and techniques for commuting and driving on to the project site to prevent mortality of all wildlife species on roads.

3.0 ENVIRONMENTAL BASELINE

Summary environmental baseline data for the Proposed Action area are presented here, including specific biological conditions relating to mountain plover. More detailed environmental baseline data can be found in the BA for the ISEC West Project.

3.1 Survey Methods

RECON conducted surveys within the solar field, solar field access road, and transmission right-of-way to catalogue biological resources in April, May, June, July, and November 2010. As discussed in the BA (RECON 2010), surveys included a general biological survey, rare plant surveys, a protocol nesting season survey for burrowing owl (*Athene cunicularia*), a protocol nesting season survey for southwestern willow flycatcher (*Empidonax traillii extimus)*, and a preliminary delineation for jurisdictional resources. The general survey area for most of the surveys (survey area) was 1,351.2 acres and included the following:

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* A qualified Designated Biologist must have (1) a Bachelor's degree with an emphasis in ecology, natural resource management, or related science; (2) 3 years of experience in field biology or a current certification of a nationally recognized biological society such as The Ecological Society of America or the Wildlife Society; (3) previous experience with applying terms and conditions of a biological opinion; and (4) an appropriate permit and/or training if conducting focused or protocol surveys for listed or proposed species.

- R-1: ISEC West Solar Field (1,128.0 acres)
- IVW-2: Preferred Transmission Line—300-foot corridor (120-foot ROW + 90-foot survey buffer; 192.4 acres)
- IVW-2B: Private Land Bypass Line—120-foot corridor (120-foot ROW); 30.8 acres)

Since the preparation of the BA, winter avian point count surveys (Appendix A at the end of this addendum) and a protocol survey for wintering mountain plover have been conducted.

Mountain Plover Haibtat Assessment

On January 18, 2011, USFWS provided the *Interim - Survey Guidance for Wintering Mountain Plover (Charadrius montanus) in the Imperial Valley* (USFWS 2011) in order to provide guidance on conducting presence/absence surveys and determining winter population numbers for mountain plover. Ornothologists Gavin Bieber and Jake Mohlmann conducted a habitat assessment to determine the suitability of the proposed solar field for the mountain plover on January 29, 2011. The Interim Survey Guidance defines suitable habitat as "abandoned, idle, and active agricultural fields with bare ground or vegetation shorter than 25 centimeters (9.84 inches)". Although the Guidance identifies abandoned agricultural fields as potential suitable habitat, the abandoned agricultural fields within the proposed solar fields have degraded to the point where they no longer provide suitable foraging habitat for mountain plover during over-wintering, as discussed in Section 3.3 below. In addition to the habitat assessment conducted above, Bob Miller, a local Imperial Valley ornithologist familiar with mountain plover and its habitat requirements, conducted a habitat assessment on the proposed solar field. Both ornothologists, Bob Miller and Gavin Bieber, concluded that the abandoned agricultural fields do not provide suitable foraging habitat for mountain plover as seen in Attachments 1 and 2.

3.2 Existing Biological Conditions

Refer to Section 3.2 (Existing Biological Conditions) of the December 2010 BA for additional details on land uses, topography and soils, general vegetation, as well as water resources. A summary of conditions relevant to the mountain plover are included below.

3.2.1 Land Uses

The proposed solar field is disturbed from previous agricultural use. Agricultural practices ceased over 10 years ago, but past agriculture practices on the land are still evident by the furrows in the fields and system of concrete irrigation channels. The field is situated next to the Westside Main Canal (a south-to-north-running canal), which brings water to the large agricultural complex surrounding El Centro and immediately east of the proposed solar field.

3.2.2 Topography and Soils

Alluvial fans and washes run through the proposed solar field site at various locations, flowing northeast from Mount Signal to enter the Westside Main Canal that skirts the edge of the active agricultural fields. The majority of the fields consist of farm–field topography, including furrows, irrigation ditches, culverts, and berms separating the fields. The southwesternmost parcel within the proposed ISEC West solar field appears to have been abandoned longer than others, as the agricultural furrows are less evident and some native plant species have re-established. The soils within the abandoned agricultural fields are relatively hard packed and preclude burrowing by small mammals in many areas.

There are seven major soil types found within the action area: Glenbar, Imperial, Indio–Vint, Vint, Meloland, Niland, and Rositas soils (NRCS 2006, 2010). These soils are primarily found on flat basin floors and are formed from clay, silt, and sandy alluvium materials.

3.2.3 Vegetation

The proposed project area contains seven mapped vegetation communities, including creosote bush–white burr sage scrub, desert wash (smoke tree woodland and big galletta shrub steppe mix), mesquite thicket, tamarisk thicket, open water, and abandoned agricultural fields (upland mustard). Active agricultural fields are present outside of the proposed project area to the east of the Westside Main Canal.

The abandoned agricultural fields encompass the majority of the proposed ISEC West solar field. While a number of weedy species have established since agricultural practices ceased, exotic mustard species such as Sahara mustard (*Brassica tournefortii*) and London rocket (*Sisymbrium irio*) provide the dominant vegetative cover in most areas and are classified in the upland mustard vegetation alliance (see Photographs 1–3). Nettle-leaf goosefoot (*Chenopodioum murale*) and Mediterranean grass (*Schismus barbatus*) are also co-dominant species that provide significant vegetative cover, although the density and composition varies throughout the survey area. Other common species within the abandoned agricultural fields include narrow-leaved forget-me-not , *(Cryptantha augustifolia*), desert cambess (*Oligomeris linifolia*), and Peirson's browneyes (*Camissonia claviformis)*. In addition, native perennials such as four-wing saltbush (*Atriplex* canescens) and desert holly (*Atriplex hymenelytra)* are beginning to re-establish along the edges of the fields, adjacent to the canal and Interstate 8.

Water Resources

The action area is located in the desert of southeastern California, an area marked by long, hot summers and meager rainfall. Surface water in the extended vicinity of the action area includes the Salton Sea, the Colorado River, and the Gulf of California. Other than canals that carry Colorado River water to the Imperial Valley, water resources in the immediate vicinity of the action area are limited.

Water is diverted from the Colorado River into the All-American Canal at the Imperial Dam. Flow proceeds in a westerly direction, and smaller distribution canals carry water from the canal into the Imperial Valley and Coachella Valley (Imperial Irrigation District 2006). Along the U.S.–Mexico Border, adjacent to the proposed solar field, All-American Canal makes a 90-degree turn north and becomes the Westside Main Canal, which flows north through Imperial Valley, adjacent to the eastern edge of the ISEC West solar field, and into the Salton Sea. Smaller irrigation channels distribute water from the two main canals through the agricultural complex surrounding El Centro. The small concrete irrigation channels within the ISEC West project area have not received water flow since the abandoning of the agricultural practices.

3.3 Status of Mountain Plover within the Action Area

On June 29, 2010 USFWS reinstated the December 5, 2002 proposed rule to list the mountain plover as threatened under the ESA (USFWS 2010). Prior to this reinstatement, the 2002 proposed rule to list the species was withdrawn on September 9, 2003 (68 FR 53083), including the proposal to list the species as threatened in conjunction with a proposed special 4(d) rule. Mountain plover is also a state species of special concern. No critical habitat has been designated for the mountain plover, and none is proposed. This species is also listed under the Migratory Bird Treaty Act (MBTA) of 1918 and therefore protected from "take."

A member of the family Charadriidae, the mountain plover is small terrestrial shorebird which averages 8 inches in length. Mountain plovers are light brown above and white below, and are

distinguished from other plovers by the lack of the contrasting dark breast band. Mountain plovers are migratory, wintering in California, southern Arizona, Texas, and Mexico, and breeding primarily in Colorado and Montana from April through June. Breeding also occurs in Arizona, Utah, Wyoming, Nebraska, Kansas, Oklahoma, Texas, and New Mexico. The Sacramento, San Joaquin, and Imperial valleys of California are thought to support the greatest number of wintering mountain plovers (USFWS 2010).

Throughout their range, mountain plovers are found within sparsely vegetated areas such as xeric shrublands, shortgrass prairie, and barren agricultural fields, but rarely near water. They are a diurnal species, foraging during daylight hours for ants, beetles, crickets, and grasshoppers with a series of short runs and stops.

Mountain plovers nest in areas with short vegetation and bare ground, including near livestock watering tanks. Nests are constructed as a depression in the ground and lined with organic debris in areas with at least 30-percent bare ground and with nearby conspicuous objects such as rocks or forb clumps. Vegetation at nest sites is typically less than 4 inches in height, and slope is less than 5 percent. Nest sites are typically dominated by needle-and-thread (*Sitpa comata*), blue gamma (*Bouteloua gracilis*), buffalo grass (*Buchloe dactyloides*), plains prickly pear cactus (*Opuntia polycantha*), June grass (*Koeleria cristata*), and sagebrush (*Artemisia* sp.; USFWS 1999). Mountain plovers have historically nested on black-tailed prairie dog (*Cynomys ludovisianis*) "towns." Clutch size ranges from 1–4 eggs.

Mountain plovers use non-breeding (wintering) habitats that are similar to those they use on breeding grounds: heavily grazed pastures, burned fields, fallow fields, and tilled fields (Hunting *et al.* 2001 as cited in Andres and Stone 2009; Knopf and Wunder 2006 as cited in Andres and Stone 2009). Mountain plovers were historically associated with kangaroo rat (*Dipodomys*) precincts and California ground squirrel (*Spermophilus beecheyi*) colonies within the Central Valley of California (U. S. Fish and Wildlife Service 2003 as cited in Andres and Stone 2009). In California's Imperial Valley, they preferentially use alfalfa (*Medicago sativa)* fields that have been harvested and grazed by domestic sheep, as well as Bermuda grass (*Cynodon dactylon*) fields that have been burned post-harvest (Wunder and Knopf 2003 as cited in Andres and Stone 2009).

Mountain plovers are considered to have been historically common in western and central Kansas; between Fort Supply, Oklahoma, and Dodge City, Kansas; western South Dakota; and they may have bred in northern Mexico (USFWS 1999). Information from the Breeding Bird Survey and Christmas Bird Count data shows a decline in the mountain plover at a rate of 2.7–2.8 percent per year from 1966 to 2007, although the data are characterized as having deficiencies (Andres and Stone 2009).

Threats to the mountain plover include loss of habitat due to conversion of grasslands to urban and active agricultural uses in their breeding grounds, prairie dog control, domestic livestock management; human disturbance during the nesting season; grasshopper control measures; use of pesticides; and other land uses throughout their range (USWFW 1999). Specific conservation issues for the mountain plover in the Imperial Valley include the variable nature of agricultural crops; although cultivated fields are abundant in the Central and Imperial valleys, only proportions may be suitable in any given year (Andres and Stone 2009). Economic forces in any given year dictate crop selection and livestock operations, which can positively or negatively affect mountain plover habitat (Andres and Stone 2009).

Because Mountain plovers are relatively tolerant of disturbance, human intrusion and disturbance have not been identified as major winter conservation threats, although response varies for individual birds (Andres and Stone 2009). Mountain plovers have been described as extremely tolerant of machinery, including off-road vehicles, tractors, and military aircraft (Andres and Stone 2009). Plovers will quickly leave roost areas when approached by walking humans (Knopf and Wunder 2006 as cited in Andres and Stone 2009).

Occurrence within the Action Area

Mountain plovers are known to over-winter in the Imperial Valley, foraging within the large agricultural complex that surrounds El Centro and spans from Mexico to the Salton Sea. In 2009, the Imperial County Agricultural Crop and Livestock Report (Imperial County 2009) reported approximately 353,128 acres of field crops being grown within this large agricultural complex, including primarily alfalfa hay, Bermuda grass hay, Kleingrass hay, pastured crops, Sudan grass hay, and wheat. An additional 62,237 acres of primarily alfalfa and Bermuda grass were grown as seed crops (Imperial County 2010), totaling over 415,365 acres of alfalfa and grass crops. Additional grass crop fields are present south of the border in Mexico. As discussed previously, mountain plover forage in the fields at various stages of the crop rotation, including when soils are freshly tilled prior to planting, when the crops are young and vegetative growth is still under 25 centimeters in height, after the crops have been harvested and short stubble is present, and after the fields have been burned to prepare for the next crop.

As the crops and rotation schedules on any given field within the Imperial Valley often differ from year to year, the amount of foraging habitat available to mountain plover at any specific time period would also differ from year to year. Assuming that any given crop/field is suitable as foraging habitat for 50 percent of the wintering months of November through February, either because it provides habitat after being planted until it grows too tall or because the crops are harvested and/or burned mid-winter in preparation for a spring crop, we estimate that an average of 214,962 acres of foraging habitat would be available at any given time during winter months in Imperial Valley, as detailed in Table 2 below.

TABLE 2
AGRICULTURAL CROP HISTORY FOR 2005–2009 IN THE IMPERIAL VALLEY

Year	Field Crop (Acres)	Seed Crop (Acres)	Total (Acres)	Estimated Habitat Available During Winter Months (50% of Total)	Variation from Prior Year	Variation from Average
2009	353,128	62,237	415,365	207,683	(30,759)	7,279
2008	412,335	64,547	476,882	238,441	31,583	23,480
2007	352,156	61,561	413,717	206,859	(11,179)	8,103
2006	361,383	74,691	436,074	218,037	14,249	3,076
2005	351,866	55,711	407,577	203,789		11,173
Average	366,174	63,749	429,923	214,962		10,622

Source: Imperial County (2006–2010)
Notes:
- Variation in acres of estimated foraging habitat varies year by year by 10,000 to 30,000 acres.
- Total estimated foraging habitat is stable or even trending up.

A study conducted in 1999 by the Point Reyes Bird Observatory catalogued the avifauna using the Salton Sea and surrounding agricultural complex (Shuford et al. 2000). In 1999, the study counted approximately 2,486 Mountain Plovers in the Imperial Valley in February, 2,790 in November, and 3,758 in December. The mean number for these three surveys represents about 30–38 percent of the species' estimated population of 8000 to 10,000 individuals (Anonymous 1999 as cited in Shuford et al. 2000). On prior surveys across the California wintering range, the 2,072 and 755 Mountain Plovers recorded in the Imperial Valley in 1994 and 1998, respectively, represented 61 percent and 35 percent of the totals of 3,390 and 2,179 individuals found statewide (B. Barnes in CDFG unpublished data; K. Hunting cited in Shuford et al. 2000). The higher totals in the Imperial Valley in 1999 are thought to reflect an increase in observer coverage there over prior years rather than a population increase (Shuford et al. 2000). In 1999, plovers were distributed widely over the

Imperial Valley with no consistent areas of concentration (Figure 7), presumably reflecting the shifting availability of suitable fields with the temporal and spatial variation in cultivation practices (Shuford et al. 2000). Concentrations of plovers in a relatively few sites in February appeared to reflect a preference by plovers for burned fields at that season (Shuford et al. 2000). As seen in Figure 7, the study shows various sized flocks foraging throughout this agricultural complex during the winter months surveyed, including a large assemblage (>250 individuals) observed adjacent to the proposed solar field in the month of February.

A more recent survey, coordinated by the Natural History Museum of Los Angeles County (NHMLAC), was conducted throughout the Imperial Valley on Januray 21–23, 2011. This survey recorded 877 mountain plovers within aproximately 20 percent of the 23 search areas; no mountain plovers were detected south of Interstate 8 (K. Molina, pers. comm. 2011). This study shows a marked decline in population numbers from previous surveys coordinated by the NHMLAC in 2007 (which yielded 4,687 birds within 86 percent of areas surveyed) and in 2008 (which yielded 2,955 birds within 74 percent of the search areas).

This decline in population numbers does not appear to relate directly to the amount of foraging habitat available in the Imperial Valley. As seen in Table 2, the acreage of agricultural fields fluctuated by tens of thousands of acres between 2005 and 2009, but the fluctuations in acreage remained within ±15 percent of the average acreage every year (Imperial County 2006, 2007, 2008, 2009, 2010). The population numbers of mountain plover decreased from 2007 to 2008 (K. Molina, pers. comm. 2011), while the acreage of field crops increased from 2007 to 2008.

Site-specific Habitat Assessment

While mountain plovers are known to forage in active and fallow agricultural fields (Hunting et al. 2001 as cited in Andres and Stone 2009; Knopf and Wunder 2006 as cited in Andres and Stone 2009), they are not expected to use the long-abandoned agricultural fields. The term fallow refers to land that is plowed and tilled but left unseeded during a growing season. The practice of alternating crop and fallow assumes that by clean cultivation the moisture received during the fallow period is stored for use during the crop season (Encyclopædia Britannica 2011). While fallow, the soil is still soft due to the previous tilling, and moisture is present, providing an ideal habitat for the insects that mountain plover forage on. Conversely, the abandoned agricultural fields within the proposed solar field have received no water or soil disturbance in at least 10 years, longer in some areas. The soil within the abandoned agricultural fields is hardened, and while harvester ants are present at various locations, the amount and variety of insect activity within the abandoned fields is much lower than in an active or fallow field. The solar field project site provides at best very poor quality foraging habitat for mountain plover. Given the abundance of highly suitable foraging habitat present within the Imperial Valley and considering that during the 2011 NHMLAC survey only a fraction of that highly suitable available habitat was being utilized by mountain plover (K. Molina, pers. comm. 2011), plovers are not expected to forage within the unsuitable abandoned agricultural fields with the proposed project area.

Mountain plovers were not observed within the proposed solar field during avian point count surveys conducted during four consecutive weeks in December 2010 (see Appendix A). Given the lack of suitable mountain plover foraging habitat within the proposed solar field and the lack of detection during four consecutive weeks of avian point count surveys, mountain plovers are not expected to occur within the project area.

Active agricultural fields are present to the east of the proposed project and may provide suitable foraging habitat for mountain plover; however, no impacts to mountain plover due to nearby construction noise is expected to occur given their extreme tolerance for machinery (Andres and Stone 2009). As discussed in the BA for the ISEC West Project, lighting during construction and O&M activities will be minimal and will be pointed inward toward the solar field. This lighting within

the proposed solar field is not expected to affect mountain plover, as they are diurnal species that would not be moving through the area at night.

As mountain plovers are not expected to forage within the project area, and mountain plover foraging in the agricultural complex to the east is not expected to be affected by construction or operational noise or lighting, the Proposed Action will have no direct or indirect effects on mountain plover.

4.0 CUMULATIVE IMPACTS

Cumulative impacts include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this BA.

As discussed in the BA for the ISEC West Project, all of the proposed or approved projects anticipated in the Imperial Valley have a federal nexus and are subject to Section 7 consultation with USFWS; therefore, these projects are not considered in the cumulative effects analysis for the Proposed Action.

As the Proposed Action will not affect mountain plovers or suitable foraging habitat for wintering mountain plovers, the Proposed Action does not contribute to the cumulative effects to mountain plovers within the action area.

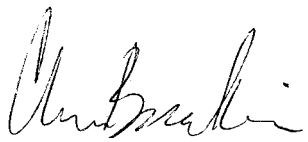
5.0 CONCLUSION

The Proposed Action's construction and O&Maintenance will have no effect to mountain plovers or their winter foraging habitat.

The BA for the ISEC West Project contains conclusions about the additional species covered under the assessment.

If you have any questions, please do not hesitate to contact me.

Sincerely,



Cheri A. Boucher
Senior Biologist

CAB:eab

Enc. Attachments

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ATTACHMENT 1

ATTACHMENT 2

APPENDIX A

Imperial Solar Energy Center West

Appendix I-2

Spring 2010 Rare Plant Survey Report

Prepared by Recon Environmental, Inc.

July 23, 2010

Imperial Solar Energy Center West
Spring 2010 Rare Plant Survey Report

Submitted to
CSOLAR Development LLC
1044 N. 115th Street, Suite 400
Omaha, NE 68154
Attention: Steve Johnson

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333 F 619.308.9334
RECON Number 5726
July 23, 2010

Cheri A. Bouchér
Senior Project Biologist

Carianne S. Funicelli Campbell
Vegetation Ecologist

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Executive Summary

CSOLAR Development, LLC (CSOLAR) is proposing to build a photovoltaic solar field and associated transmission lines west of El Centro, California. The proposed Imperial Solar Energy Center (ISEC) West project is located approximately 8 miles west of El Centro in Imperial County, California (Figure 1). The proposed project includes a 1,128-acre solar field (R-1) that abuts Interstate 8 to the north and south; a proposed 230-kilovolt (kV) transmission line route (IVW-1) running from the southwest corner of the solar field to the Imperial Valley Substation adjacent to an existing 230-kV transmission line; an alternate 230-kV transmission line route (Alternative A; IVW-2) running from the southeast corner of the solar field to the Imperial Valley Substation. An additional transmission line route running north across the Westside Canal is also discussed. This route is referred to as Imperial Valley North.

Rare plant surveys were conducted during the spring of 2010 within the proposed solar field and transmission routes. The 1,707.5-acre survey area is located in a Colorado Desert lowland between agricultural fields to the east and Mount Signal to the west. Seven vegetation communities were mapped within the survey area, including creosote bush–white burr sage scrub, desert wash (smoke tree woodland and big galleta shrub steppe mix), mesquite thicket, tamarisk thicket, open water, fallow agricultural fields (upland mustard), and active agricultural fields. Four priority plant species were observed within the survey area and vicinity during spring rare plant surveys, including brown turbans (*Malperia tenuis*), Salton milkvetch (*Astragalus crotolariae*), Thurber's pilostyles (*Pilostyles thurberi*), and Parish's desert-thorn (*Lycium parishii*).

The four species mentioned above should be avoided where practicable. If impact is unavoidable, individual plants should be relocated, when appropriate, or included as part of the restoration palette for temporary or permanent impact.

1.0 Introduction

This Rare Plant Survey Report documents the methods and results of Spring 2010 surveys for rare plants within the Imperial Solar Energy Center (ISEC) West project area.

1.1 Location

The proposed Imperial Solar Energy Center West Project is located approximately 8 miles west of El Centro in Imperial County, California (Figure 1). The proposed project includes a 1,128-acre solar field (R-1) that abuts Interstate 8 to the north and south; a proposed 230-kilovolt (kV) transmission line route (IVW-1) running from the southwest

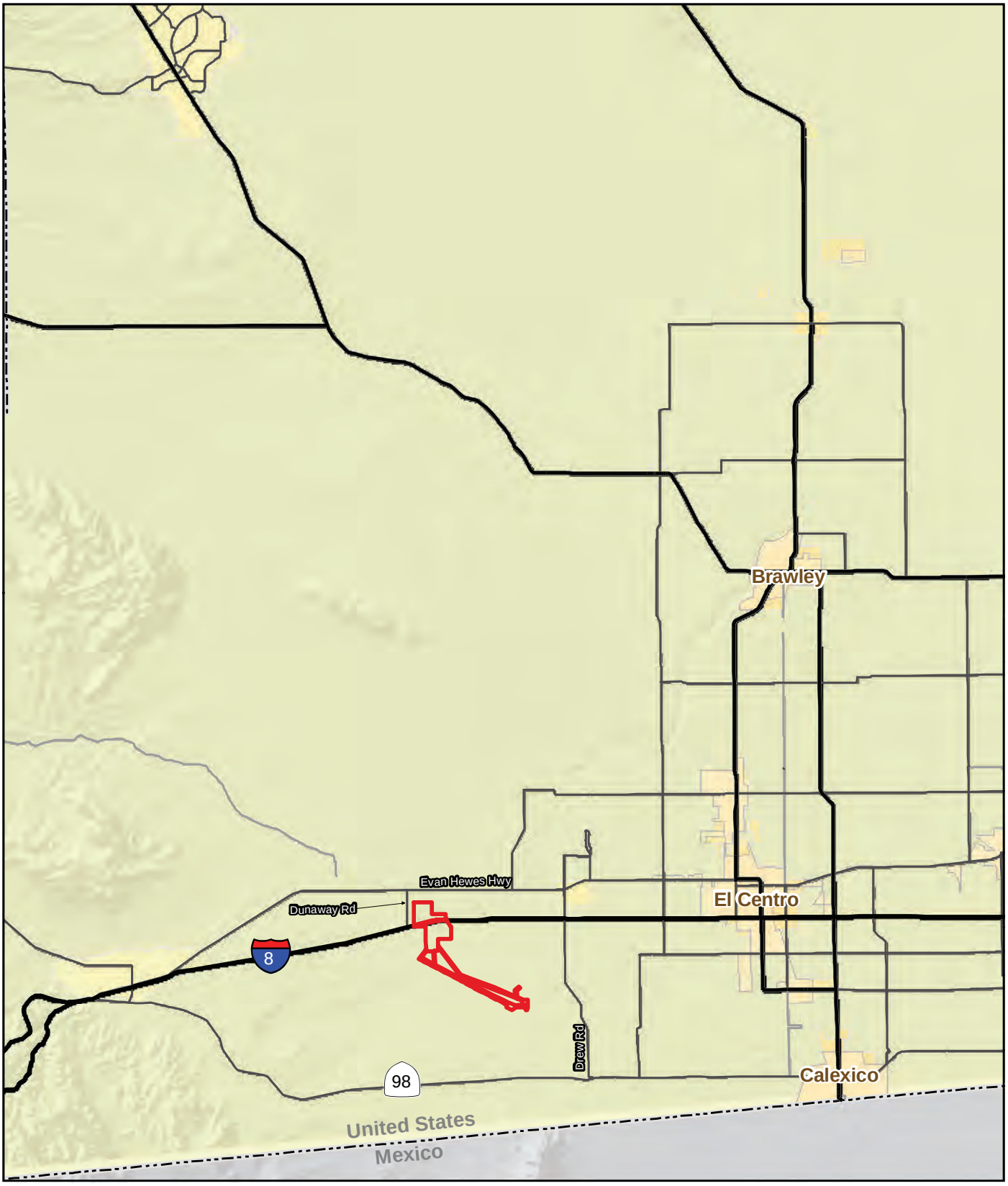

FIGURE 1

Regional Location

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corner of the solar field to the Imperial Valley Substation adjacent to an existing 230-kV transmission line; and an alternate 230-kV transmission line route (IVW-2) running from the southeast corner of the solar field to the Imperial Valley Substation (Figures 2 and 3). An additional transmission line running from IVW-2, north across the Westside Canal is also discussed. This route is referred to as Imperial Valley North (IVN).

The project area is found in: Township 16 South, Range 11 East, Sections 19, 24, 25, 30, and 31; Township 16 South, Range 12 East, Sections 18, 19, 30, 31, 32, 33, and 34; Township 16.5 South, Range 12 E, Sections 3 and 4; of the U.S. Geological Survey (USGS) Plaster City, Mount Signal, and Yuha Basin quadrangles (USGS 1976a, 1976b, 1979; Figures 2 and 3). The proposed project is found within fallow agricultural fields and undisturbed desert immediately west of the active agricultural complex that surrounds El Centro, California.

1.2 Project Description

CSOLAR Development, LLC proposes to construct a photovoltaic (PV) solar facility. The project consists of ground mounted PV solar power-generating system capable of producing approximately 250 megawatts of electricity. Approximately 1,072 acres of the 1,128-acre ISEC West solar field are expected to be impacted by the proposed project. Construction impact associated with the solar field consists of use of heavy equipment, on-site cement mixing, and deliveries of equipment. Minimal cut and fill grading would be required.

CSOLAR is proposing a 230-kV overhead transmission line (Preferred Transmission Line; IVW-1) that will connect CSOLAR's PV solar field on private land with the Imperial Valley Substation. (Substation) The proposed transmission line will be located almost entirely on Bureau of Land Management (BLM) land. It would run parallel to the Southwest Powerlink and then connect to the north side of the Imperial Valley Substation (Figures 2 and 3). The BLM right-of-ways (ROW) required for this transmission project would be 120 feet wide and total approximately 69 acres. However, as shown below, the project disturbance footprint would be substantially smaller. The transmission support structures would consist of steel lattice towers and/or steel monopoles which would be erected on the center line of the 120-foot ROW. The towers would be spaced approximately 900 to 1,150 feet apart (600 to 800 feet apart for monopoles) and would be roughly in line with the existing line's towers in an east–west direction. Within 1,000 feet of the Substation, the towers would switch to galvanized steel monopoles. It is planned for each support structure to be capable of carrying two electrical circuits. One circuit would be added as part of this project and the second circuit could be added at a later date. The electrical circuit consists of three phases with one unbundled conductor making up each phase. The towers would be anchored to concrete foundations at each of the four corners at the base of the tower. The tower

base dimensions would range from approximately 30 feet by 30 feet for suspension towers to 40 feet by 40 feet for the deflection and dead-end towers.

CSOLAR is also proposing an alternative transmission line (Alternative A Transmission Line; IVW-2) that would run from the north side of the Substation to connect to the southeast corner of the proposed solar field. The ROW requirements and transmission construction would be similar to IVW-1, described above.

Another alternative transmission line (Imperial Valley North; IVN) would move north from the Substation and cross over the Westside Main Canal to connect to an existing transmission line.

2.0 Survey Methods

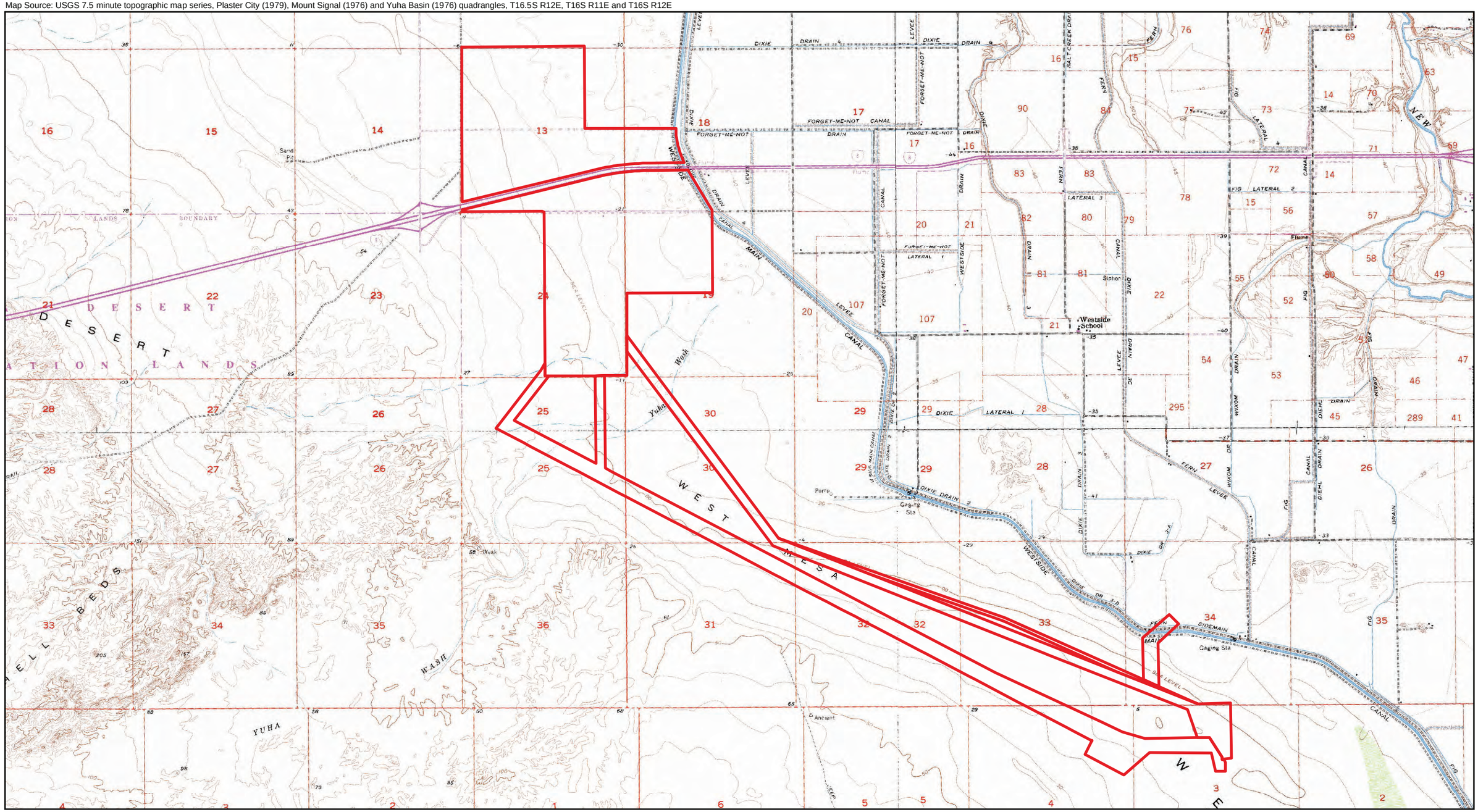
Data regarding rare plants with the potential to occur within the project area were obtained through a literature review of applicable reference materials and through field surveys.

2.1 Literature Review

Determination of the potential occurrence for listed, sensitive, or noteworthy species is based upon known ranges and habitat preferences for the species (State of California 2010a; CNPS 2001; Reiser 2001), species occurrence records from the California Natural Diversity Database (CNDDB; State of California 2010b), the BLM Special Status plant and wildlife species website (BLM 2010), and species occurrence records from other sites in the vicinity of the survey area. Additional resources that were consulted included *Biological Technical Report for Imperial Valley to La Rosita 230-kV Line, Imperial Valley, California* (RECON 2001) and *Early Spring 2010 Botanical Surveys for Imperial Valley Solar* (URS 2010).

A list of all potential listed, sensitive, or noteworthy species was compiled based on these resources (Appendix A). This list served as the basis for the rare plant surveys, and the likelihood of occurrence based on habitat requirements and suitability of habitat within the survey area was evaluated (Appendix A). Prior to fieldwork, a project-specific field guide was developed and a library of botanical resources was gathered to assist biologists in the identification of these species.

Map Source: USGS 7.5 minute topographic map series, Plaster City (1979), Mount Signal (1976) and Yuha Basin (1976) quadrangles, T16.5S R12E, T16S R11E and T16S R12E



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Project Area

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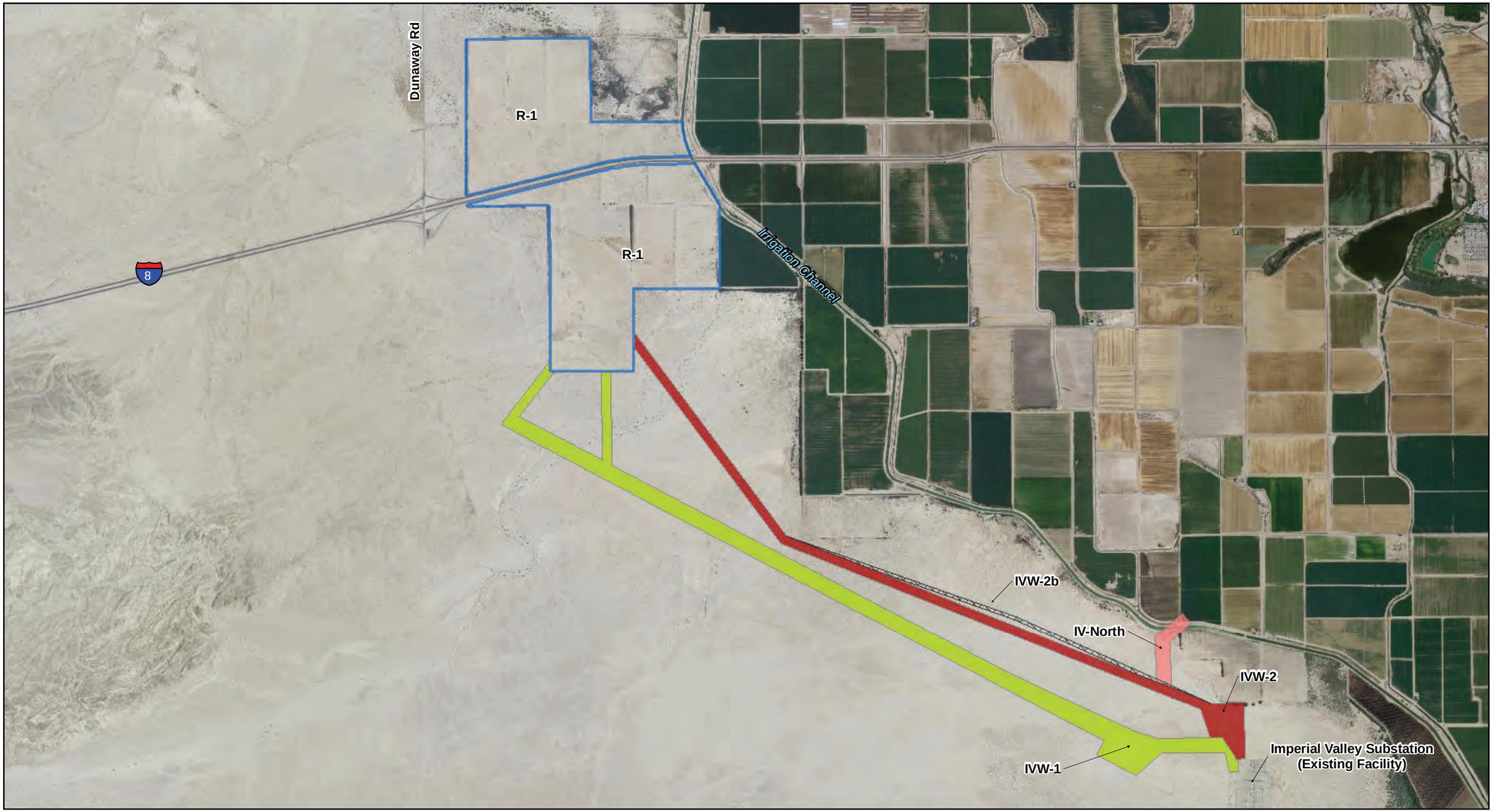
FIGURE 2

Project Location on USGS Map

Image Source: CDFG (flown Summer 2009)



Project Components

- IV West Project Area (R-1)
- Transmission Line Connector (IV-North)
- Preferred Transmission Line (IVW-1)
- Alternate Transmission Line (IVW-2)
- Alternate Transmission Line (IVW-2b)

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FIGURE 3

Project Location on Aerial Photograph

2.2 Focused Rare Plant Survey

The 1,707.5-acre survey area encompasses the entire solar field, the 120-foot-wide ROWs along the transmission line routes, and a buffer of varying size on either side of the transmission line ROWs. The survey area is shown on Figure 3 and includes the following project components:

- R-1 ISEC West Solar Field (1,128 acres)
- IVW-1 Proposed Transmission Line 500-foot corridor (120-foot ROW + 190-foot survey buffer; 362.2 acres)
- IVW-2 Alternative A Transmission Line (IVW-2 and IVW-2A) 300-foot corridor (120-foot ROW + 90-foot survey buffer; 192.4 acres)
- IVN Transmission Route 500-foot corridor (120-foot ROW + 190-foot survey buffer; 26.0 acres)

Botanical surveys of the 1,708.5-acre project area were conducted by qualified RECON biologists during the spring of 2010 to map vegetation communities, inventory species present at the time of the survey, and assess the presence or potential for occurrence of sensitive and priority plant species within the project area. Two surveys were conducted: a complete survey designed to cover 100 percent of the project area in March–April 2010 and a follow-up intuitive controlled survey in May 2010. The surveys included a directed search for special status plants that would have been apparent during the time of the surveys. Rare plant surveys followed the *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species* (BLM 2009).

An additional survey area was added to the project in July 2010. General biological surveys, focused burrowing owl surveys, and a preliminary jurisdictional delineation were conducted in July 2010; however, a spring rare plant survey of this project component was not conducted. A spring rare plant survey will be conducted for this component in Spring 2011 if necessary.

- IVW-2 Alternative B Transmission Line segment IVW-2B, 120-foot corridor (30.8 acres)

All plant species observed within the project area were recorded, and plants that could not be identified in the field were collected for identification with taxonomic keys. Floral nomenclature follows Baldwin et al. (2002) for common plants and California Native Plant Society (CNPS 2001) for sensitive plants (as updated by the Jepson Flora Project Jepson Online Interchange [2009]). Vegetation communities were mapped in accordance with California Department of Fish and Game guidelines (CDFG 2009) on a one-inch-equals-350-feet color aerial photograph taken in January 2007 (Figures 4a and 4b).

2.2.1 Complete Survey (March–April 2010)

A complete floristic survey, as defined in *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species* (BLM 2009), was conducted within the survey area between March 24 and April 14, 2010. Survey transects were conducted by two biologists walking roughly parallel transects approximately 15–30 meters apart, depending on topography and homogeneity of vegetation in the area. Biologists had overlapping fields of vision at this distance, resulting in very thorough survey coverage. Survey routes (aka "tracklogs") and locations of rare plants were mapped using a Trimble Geographical Positioning System (GPS) with sub-meter accuracy (Appendix B). Survey details are presented below in Table 1.

Each surveyor recorded field notes that included all plant species encountered, habitat type, and any unique descriptive features of the survey area. In addition, Native Species Field Survey Forms were submitted to CNDDB for each rare taxon occurrence. These field notes and CNDDB forms have been submitted to the BLM under separate cover.

2.2.2 Directed Survey (May 2010)

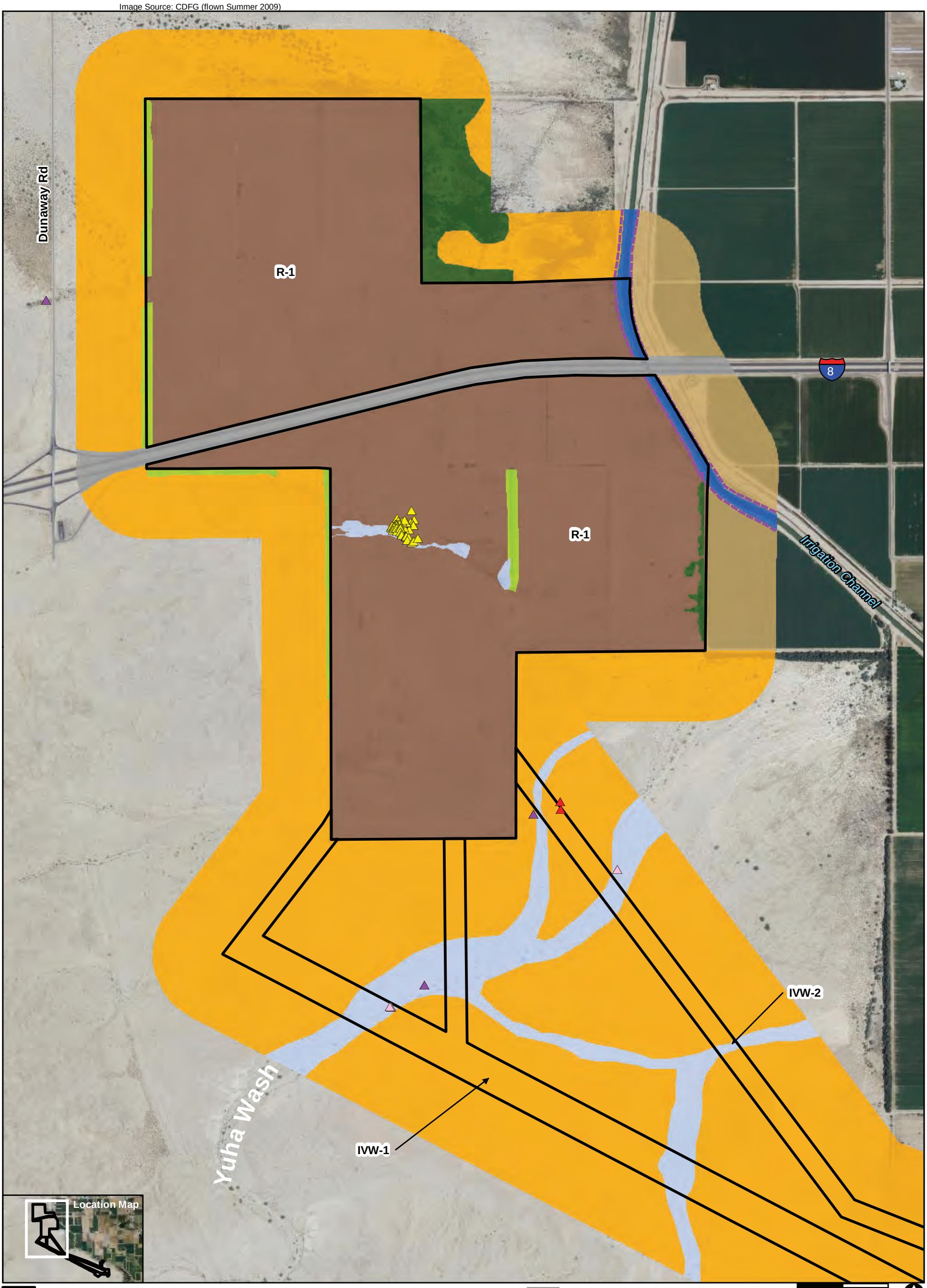
This second spring survey followed the "Intuitive Controlled Survey" protocol (BLM 2009) in order to further investigate habitats that were identified during the primary focused survey as having a higher potential for the presence of special status species. This survey included a focused and intensive survey in uplands with rocky cobble substrates and washes and provided an opportunity to make additional species identifications based on phenological characters that were not present during the initial survey.

Survey details are presented in Table 1.

2.3 Qualifications of Field Personnel

BLM requires that personnel conducting rare plant surveys meet a minimum set of qualifications, including strong plant identification skills and familiarity with the flora and natural vegetation communities of the survey area. Resumes for RECON personnel who conducted the rare plant surveys are included in Appendix C.

Image Source: CDFG (flown Summer 2009)



Survey Area

Sensitive Plant and Wildlife Species

- Brown Turbans (*Malperia tenuis*)
- Parish's Desert-thorn (*Lycium parishii*)
- Salton Milkvetch (*Astragalus crotolariae*)
- Thurber's Pilostyles (*Pilostyles thurberi*)

Vegetation Communities

- Active Agriculture
- Creosote Bush-White Burr Sage Scrub
- Desert Wash (Smoke Tree Woodland intermixed with Big Galleta Shrub-steppe)
- Developed
- Fallow Agricultural Fields
- Mesquite Thicket
- Open Water/Irrigation Canal
- Tamarisk Thicket
- Arrow-weed Thicket

0 Feet 1,300

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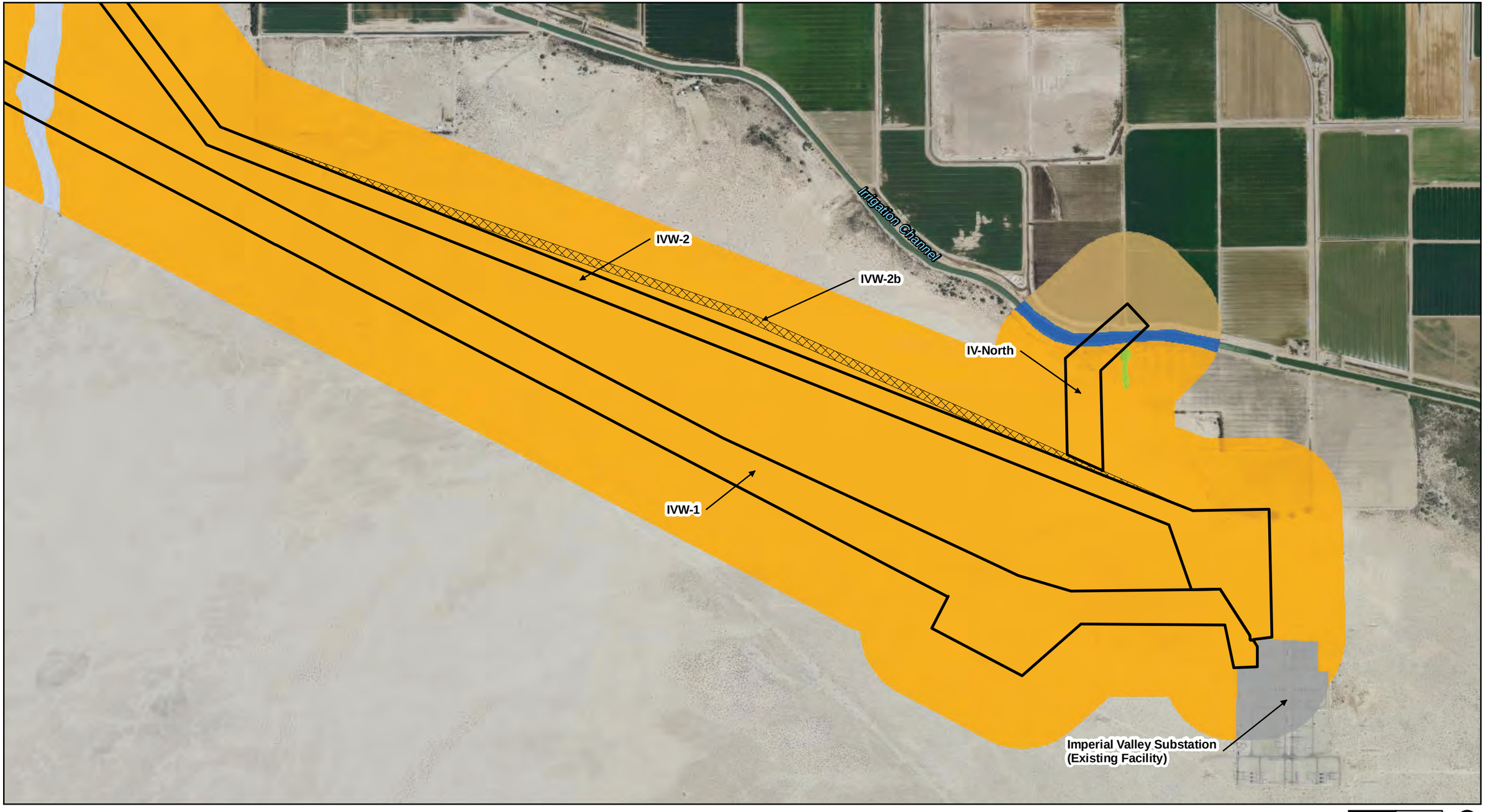
FIGURE 4a
Vegetation Communities
and Rare Plant Locations within the
Imperial Solar Energy Center West Survey Area

Image Source: CDFG (flown Summer 2009)



Survey Area

Not surveyed in Spring 2010

Vegetation Communities

Active Agriculture

Creosote Bush-
White Burr Sage Scrub

Desert Wash
(Smoke Tree Woodland intermixed
with Big Galleta Shrub-steppe)

Developed

Open Water/Irrigation Canal

Tamarisk Thicket

0 Feet 1,300

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FIGURE 4b
Vegetation Communities
and Rare Plant Locations within the
Imperial Solar Energy Center West Survey Area

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS DURING IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEYS

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
03/24/2010	ALL	N/A	Vegetation mapping, general biological survey	Cheri Bouchér Carianne Campbell	8:00 A.M.; 50ºF; winds 7–10 mph; 0% cloud cover	4:15 P.M.; 80ºF; winds 0–4 mph; 0% cloud cover	N/A
03/29/2010	R-1	71	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Karyl Palmer	1:30 P.M.; 85ºF; winds 0–1 mph; sunny with 60% high haze	5:00 P.M.; 87ºF; winds 0–1 mph; sunny with 60% high haze	6.8
03/30/2010	R-1	258	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Karyl Palmer	7:00 A.M.; 72ºF; winds 0–1 mph; 5% cloud cover	1:00 P.M.; 82ºF; winds 3–5 mph; 10% cloud cover	14.3
03/30/2010	ALL	N/A	Vegetation mapping, general biological survey	Cheri Bouchér Carianne Campbell Karyl Palmer	2:00 P.M.; 80ºF; winds 7–13 mph; 10% cloud cover	5:00 P.M.; 77ºF; winds 5–10 mph; 5% cloud cover	N/A
03/31/2010	R-1	320	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	9:30 A.M.; 67ºF; winds 20–30 mph; 30% cloud cover	3:30 P.M.; 75ºF; winds 30 mph; 50% cloud cover	13.3
04/01/2010	R-1	320	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	12:45 P.M.; 68ºF; winds 2–4 mph; 20% cloud cover	5:45 P.M.; 73ºF; winds 0–2 mph; 10% cloud cover	16
04/02/2010	R-1	150	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	8:00 A.M.; 56ºF; winds 2–3 mph; 15% cloud cover	10:30 A.M.; 65ºF; winds 0–1 mph; 5% cloud cover	15
04/05/2010	IVW-1	170	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	12:00 P.M.; 70ºF; winds 20–40 mph; 50 % cloud cover	4:00 P.M.; 75ºF; winds 20–40 mph; 30 % cloud cover	10.6

TABLE 1
SURVEY DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS DURING IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEYS (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
04/06/2010	IVW-1	184	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	9:00 A.M.; 65ºF; winds 2–4 mph; 0% cloud cover	1:00 P.M.; 77ºF; winds 4–7 mph; 0% cloud cover	11.5
04/07/2010	IVW-2	82	Rare Plant Survey #1	Carianne Campbell Gerry Scheid Peter Dolan	8:30 A.M.; 68ºF; winds 2–5 mph; 0% cloud cover	11:00 A.M.; 74ºF; winds 5–8 mph; 0% cloud cover	10.9
04/07/2010	IVN	26	Rare Plant Survey #1	Cheri Bouchér	9:00 A.M.; 70ºF; winds 5–8 mph; 0% cloud cover	11:00 A.M.; 74ºF; winds 5–8 mph; 0% cloud cover	13.0
04/07/2010	IVW-2	46	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	12:00 P.M.; 75ºF; winds 5–8 mph; 0% cloud cover	2:00 P.M.; 78ºF; winds 3–7 mph; 0% cloud cover	5.8
04/07/2010	ALL	N/A	Vegetation mapping, general biological survey	Cheri Bouchér Carianne Campbell	2:00 P.M.; 78ºF; winds 3–7 mph; 0% cloud cover	4:00 P.M.; 78ºF; winds 5–7 mph; 2% cloud cover	N/A
04/14/2010	IVW-2	65	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell	9:00 A.M.; 68ºF; winds 1–2 mph; 0% cloud cover	1:00 P.M.; 75ºF; winds 1–2 mph; 0% cloud cover	8.1
5/10/2010	R-1	N/A	General biological survey	Cheri Bouchér Carianne Campbell	7:00 A.M.; 65ºF; winds 5–7 mph; 3% cloud cover	9:00 A.M.; 74ºF; winds 5–7 mph; 0% cloud cover	-
05/10/2010	R-1 IVW-1, IVW-2	60	Rare Plant Survey #2	Cheri Bouchér Carianne Campbell	9:00 A.M.; 74ºF; winds 5–7 mph; 0% cloud cover	4:00 P.M.; 82ºF; winds 5–9 mph; 0% cloud cover	4.28

ºF = degrees Fahrenheit; mph = miles per hour; % = percent

3.0 Existing Conditions

3.1 Topography and Soils

The 1,707.5-acre survey area is located in a Colorado Desert lowland between agricultural fields to the east and Mount Signal to the west. Alluvial fans and washes run through the site at various locations, flowing northeast from Mount Signal to enter the Westside Main Canal that skirts the edge of the active agricultural fields. The proposed solar field is located within land previously used for agricultural fields. The majority of the fields have been fallow approximately 10 years, and the farm-field topography—including furrows, irrigation ditches, culverts, and berms separating the fields—is still prominent. The southwesternmost parcel within the proposed solar field appears to have been fallow longer, as the agricultural furrows are less evident and many native plant species have re-established. Along the proposed transmission corridors that run southeast from the solar field, the large Yuha Wash and other minor washes bisect the transmission corridors at numerous locations. The upland topography between the washes is relatively flat, with sparse vegetation and varying degrees of desert pavement on the surface. Elevation of the survey area ranges from sea level to 30 feet above mean sea level (USGS 1976a, 1976b, 1979). There are seven major soil types found within the survey area: Glenbar, Imperial, Indio-Vint, Vint, Meloland, Niland, and Rositas soils (NRCS 2006 and 2010).

- Glenbar Complex soils are found on flat basin floors and formed from mixed alluvium. This soil accounts for a large percentage of the upland areas within IVW-1 and IVW-2.
- Imperial soils are silty clay soils found on flat basin floors and consist of clayey alluvium derived from mixed sources and/or clayey lacustrine deposits. This soil is found on the east end of the proposed solar field, adjacent to the canal.
- Indio-Vint complex is made primarily of Indio and Vint soils, both of which are found on flat basin floors and formed from mixed alluvium or sandy eolian material. Both the Indio-Vint and Vint soils are found within the proposed solar field.
- Meloland soils are fine sands found on flat basin floors and formed from mixed alluvium or sandy eolian material. A large percentage of the proposed solar field and a small section at the north end of IVW-1 contain Meloland soils.
- Niland gravelly sand occurs on basin floors, and its parent material consists of alluvium derived from mixed sources. This soil occurs within the Yuha Wash across IVW-1 and IVW-2.

- Rositos soils are sandy soils found on flat basin floors and formed from mixed alluvium or sandy eolian material typically found on dunes and sand sheets (NRCS 2010). Rositas soils account for a large percentage of the proposed solar field and upland area within IVW-1 and IVW-2.

3.2 Vegetation

Vegetation in the project area was mapped to the association level according to *A Manual of California Vegetation* (Sawyer, Keeler-Wolf, and Evens 2009). As shown in Figures 4a and b, seven vegetation communities/land cover types were mapped within the survey area, including creosote bush-white burr sage scrub, desert wash (smoke tree woodland and big galleta shrub steppe mix), mesquite thicket, tamarisk thicket, open water, fallow agricultural fields (upland mustard), and active agricultural fields. Vegetation community classifications follow *A Manual of California Vegetation* (Sawyer, Keeler-Wolfe and Evens 2009). Table 2 below lists the acreage of each vegetation community and land cover type in relation to the project components.

TABLE 2
VEGETATION COMMUNITIES/LAND COVER TYPES WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA

Vegetation Community/ Land Cover Type	R-1 (acres)	IVW-1 (acres)	IVW-2 (acres)	IVN (acres)	Total (acres)
Creosote bush–white burr sage scrub	0.1	344.2	187.5	20	551.7
Desert wash	6.7	17.6	4.8	-	29.1
Mesquite thicket	6.3	-	-	-	6.3
Tamarisk thicket	15.6	-	-	-	15.6
Arrow weed thicket	1.0	-	-	-	1.0
Open water	5.0	-	-	3	8.0
Fallow agricultural fields	1,090.6	0.4	0.1	-	1,090.1
Active agricultural fields	0.6	-	-	3	3.6
Developed	2.1	-	-	-	2.1
TOTAL	1,128.0	362.2	192.4	26	1,707.5

Creosote bush–white burr sage scrub is the dominant vegetation community within the transmission line corridors in the survey area and accounts for 551.7 acres (32 percent of the survey area). This native vegetation alliance is dominated by creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*) with relatively sparse vegetative cover and very flat topography (Photograph 1). A layer of desert pavement is present between the shrubs in varying densities throughout the creosote bush–white burr sage vegetation. A number of annual species were observed during the spring surveys that offered a sparse herbaceous layer intermixed with the desert pavement (Photograph 2). These species included desert sunflower (*Geraea canescens*), desert sand verbena (*Abronia villosa* var. *villosa*), Peirson's browneyes (*Camissonia claviformis*

PHOTOGRAPH 1
IVW-2: Sparse Creosote bush, White Burr Sage Scrub with Desert Pavement Cobble Layer

PHOTOGRAPH 2
Annual Wildflowers Blooming along IVW-1

ssp. *peirsonii*), pebble pincushion (*Chaenactis carophoclinia* var*. carophoclinia*), pincushion flower (*C. stevioides*), desert cambess (*Oligomeris linifolia*), narrow leaved forget-me-not (*Crypthantha angustifolia*), and Mediterranean grass (*Schismus barbata*).

A number of **desert washes**, including the large Yuha Wash, flow northeast through the transmission corridors from Mount Signal into the Westside Main Canal. These washes are braided with the main flow channels primarily lacking in vegetation, while the sandbars and banks support **smoke tree woodland** (Photograph 3) and/or **big galleta shrub steppe** (Photograph 4) vegetation alliances. The areas dominated by smoke tree woodland support a number species, including rayless encelia (*Encelia frutescens*), sweetbush (*Bebbia juncea*), individual honey mesquite trees (*Prosopis glandulosa*), and salt cedar trees (*Tamarix aphylla*), scattered saltbush shrubs, a moderate to sparse cover of big galleta grass (*Pleuraphis rigida*), and sparse creosote bush and white burr sage. A few locations that have larger dense patches of galleta grass adjacent to or in the middle of the smoke tree woodland are classified as big galleta shrub steppe.

PHOTOGRAPH 3
R-1: Desert Wash with Smoketree–Woodland Vegetation Alliance

PHOTOGRAPH 4
IVW-1: Desert Wash with Big Galleta–Shrub Steppe Vegetation Alliance

A small **mesquite thicket**, dominated by honey mesquite, is present along the eastern edge of the proposed solar plant, adjacent to an irrigation ditch. A dense understory of quailbush (*Atriplex lentiformis*) is present along the edges of the thicket and in between the honey mesquite trees. A larger mesquite thicket is present outside of the survey area along the northeast border of the solar field. In this area, dense patches of honey mesquite are interspersed with tamarisk (*Tamarix* spp.) and creosote bush.

Rows of tamarisk trees are present along the edges of the fallow agricultural fields. These trees form dense **tamarisk thickets** that preclude other plant species from establishing.

Arrow weed (*Pluchea sericea*) has established along the edges of the irrigation canal in many locations, forming 5- to 10-foot-deep **arrow weed thickets**. These thickets largely exclude other plant species, but weedy invasive species such as sow thistle (*Sonchus* sp.), Sahara mustard (*Brassica tournefortii*), and London rocket (*Sisymbrium irio*) grow along the banks in between the arrow weed thickets.

The irrigation canal that runs along the eastern border of the proposed solar field, and through the northern half of the Imperial Valley North transmission corridor is classified as **open water**. The canal is concrete lined and the water is swift moving, which precludes marsh or riparian vegetation from establishing.

The 1,084 acres of **fallow agricultural fields** encompass the majority of the proposed IV West solar field. Many of these fields have been fallow approximately 10 years, while the southwestern parcel appears to have been fallow much longer. A number of weedy species have established since agricultural practices ceased, with mustard species such as Sahara mustard and London rocket providing the dominant vegetative cover in most areas; these areas are classified in the **upland mustard vegetation alliance** (Photograph 5). Nettle-leaf goosefoot (*Chenopodium murale*) and Mediterranean grass are also co-dominant species that provide significant vegetative cover, although the density and composition varies throughout the survey area. Other common species within the fallow agricultural fields include narrow-leaved forget-me-not, desert cambess, and Pierson's browneyes. In addition, native perennials such as four-wing saltbush, brittlebush (*Encelia farinosa*), globemallow (*Sphaeralcea ambigua*), and desert holly are beginning to re-establish along the edges of the fields, adjacent to the canal and the Interstate 8.

A small section of the IV North transmission corridor crosses the canal and enters **active agricultural fields** for a total of 3 acres.

PHOTOGRAPH 5
R-1: Fallow Agricultural Fields Dominated by Annual Mustards;
Tamarisk Thicket Visible in Background

3.3 Precipitation Patterns Preceding Survey

Precipitation in the Imperial Valley is very low. Table 3 summarizes precipitation data from the El Centro 2 SSW (042713) weather station for the period of 1932–2009. The annual average for that period was 2.67 inches, with low monthly rainfall (0.4 inch or less) nearly evenly distributed throughout the months with a period of extreme aridity (0.1 inch or less) between the months of April and July.

Precipitation patterns heavily influence the spring annual flora of the Colorado Desert. The annual mean precipitation for 2009 was extremely low (0.59 inch; 22% of average). This very low rainfall year was immediately followed by a particularly wet spring, when 3.1 inches (116% of the annual mean) were recorded between January and March 2010. As a result, there is reasonable assurance that the species observed during the Spring 2010 survey effort reflect a relatively complete picture of the spring annual flora present within the project area.

TABLE 3
MONTHLY PRECIPITATION (INCHES) FOR EL CENTRO 2 SSW (042713) WEATHER STATION

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
2009	0	0.4	0	0	0	0	0	0	0	0	0	0.2	0.59
2010	2.1	0.4	0.6	-	-	-	-	-	-	-	-	-	3.1
Mean (1932–2009)	0.4	0.4	0.2	0.1	0	0	0.1	0.3	0.3	0.3	0.2	0.4	2.67

Source: WRCC 2010

4.0 Survey Results

4.1 General Floristics

A total of 87 plant species, representing 28 plant families, were identified within the project area. Of this total, 72 (83 percent) are native to southern California and 15 (17 percent) are non-native, introduced species. A complete list of plant species observed in the survey is found in Table 4. Floral nomenclature follows Baldwin et al. (2002) for common plants and California Native Plant Society (CNPS 2001) for sensitive plants (as updated by the Jepson Flora Project Jepson Online Interchange [2009]).

TABLE 4
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA DURING SPRING 2010 SURVEYS

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2	IVN
GNETALES							
EPHEDRACEAE	**EPHEDRA FAMILY**						
Ephedra trifurca	three-fork ephedra	FA, CBS	N		X	X	X
ANGIOSPERMS: DICOTS							
AIZOACEAE	**FIG-MARIGOLD FAMILY**						
Mesembryanthemum crystallinum	crystalline ice plant	FA	I	X			
AMARANTHACEAE	**AMARANTH FAMILY**						
Amaranthus palmeri	Palmer's amaranth	AT	N	X			
Tidestromia oblongifolia	honeysweet	AT	N		X	X	X
ASTERACEAE	**SUNFLOWER FAMILY**						
Ambrosia dumosa	white burr sage	FA, AG	N	X	X	X	X
Baileya pauciradiata	lax flower	CBS	N		X	X	
Bebbia juncea	sweetbush	DW	N		X	X	
Chaenactis carophoclinia var. *carphoclinia*	pebble pincushion	CBS	N		X	X	
Chaenactis fremontii	desert pincushion flower	CBS	N		X	X	
Chaenactis stevioides	pincushion flower	CBS	N		X	X	X
Encelia farinosa	brittlebush, incienso	FA	N	X			
Encelia frutescens	rayless encelia	DW	N	X	X	X	
Geraea canescens	desert sunflower	FA, CBS	N	X	X	X	X
Hymenoclea salsola	cheese bush	FA, DW	N	X	X		X
Isocoma acradenia var. *eremophila*	alkali goldenbush	FA, CBS	N	X	X	X	X
Lactuca serriola	prickly lettuce	DW	I		X		X
Malacothrix glabrata	desert dandelion	FA, CBS	N	X		X	X
Malperia tenuis	brown turbans	CBS	N			X	
Monoptilon belliodes	desert star	CBS	N		X		
Palafoxia arida var. *arida*	Spanish needles	FA, CBS, DW	N	X	X	X	X
Perityle emoryi	rock daisy	CBS, DW	N	X			
Pluchea sericea	arrow weed	AT	N	X			X
Porophyllum gracile	odora	CBS	N		X		
Psathyrotes ramosissima	turtleback	DW	N		X	X	
Rafinesquia neomexicana	desert chickory	CBS, DW	N	X	X	X	

TABLE 4
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2	IVN
ANGIOSPERMS: DICOTS (CONT.)							
ASTERACEAE (CONT.)	**SUNFLOWER FAMILY (CONT.)**						
Sonchus sp.	sow thistle	DW	I	X	X		X
Stephanomeria pauciflora	wire lettuce	DW	N		X	X	
BORAGINACEAE	**BORAGE FAMILY**						
Cryptantha angustfolia	narrow-leaved forget-me-not	FA, CBS, DW	N	X	X	X	X
Pectocarya recurvata	comb-bur	FA, CBS, DW	N	X		X	
Tiquilia palmeri	Palmer's tiquilia	CBS, DW	N		X	X	X
Tiquilia plicata	fanleaf crinklemat	CBS, DW	N	X	X	X	X
BRASSICACEAE (CRUCIFERAE)	**MUSTARD FAMILY**						
Brassica tournefortii	Sahara mustard	FA, CBS, DW, AT	I	X	X	X	X
Lepidium lasiocarpum	peppergrass	FA, AT	N	X			X
Sisymbrium irio	London rocket	FA, CBS, DW	I	X			X
CAPPARACEAE							
Cleomella obtusifolia	Mojave stinkweed	DW	N		X	X	
CARYOPHYLLACEAE	**PINK FAMILY**						
Achyronychia cooperi	frost mat	AG, CBS, DW	N	X	X	X	
CHENOPODIACEAE	**GOOSEFOOT FAMILY**						
Atriplex canescens	fourwing saltbush, shad-scale	AG, CBS, DW	N	X	X	X	
Atriplex hymenelytra	desert holly	AG, CBS, DW	N	X			
Atriplex lentiformis ssp. *lentiformis*	quailbush	FA	N	X			
Atriplex polycarpa	desert saltbush	AG, CBS, DW	N		X	X	
Chenopodium murale	nettle-leaved goosefoot	FA, CBS	I	X			X
Suaeda moquinii	desert seepweed	FA	N			X	
EUPHORBIACEAE	**SPURGE FAMILY**						
Chamaesyce micromera	prostrate spurge	CBS, DW	N		X	X	X
Chamaesyce polycarpa	sand mat	CBS, DW					
Croton californicus var. *mohavensis*	desert croton	DW	N				

TABLE 4
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2	IVN
ANGIOSPERMS: DICOTS (CONT.)							
FABACEAE (LEGUMINOSAE)	**LEGUME FAMILY**						
Astragalus crotalariae	Salton milkvetch	DW	N		X		
Astragalus palmeri	Palmer's milkvetch	DW	N		X		
Dalea mollissima	silk dalea	DW	N		X		
Melilotus sp.	sweet clover	FA	I	X			
Parkinsonia aculeata	Mexican palo verde	FA	I	X			
Prosopis glandulosa var. *torreyana*	honey mesquite	FA, CBS, DW	N	X	X	X	
Psorothamnus emoryi	Emory's indigo bush	FA, CBS, DW	N	X	X	X	
Psorothamnus schotti	indigo bush	CBS	N			X	
Psorothamnus spinosus	smoke tree	DW	N	X	X	X	
GERANIACEAE	**GERANIUM FAMILY**						
Erodium cicutarium	redstem filaree	FA	I	X			
HYDROPHYLLACEAE	**WATERLEAF FAMILY**						
Phacelia rotundifolia	round-leaf phacelia	CBS	N	X	X	X	
MALVACEAE	**MALLOW FAMILY**						
Eremalche rotundifolia	desert five-spot	DW	N		X		
Malva parviflora	cheeseweed, little mallow	FA	I	X			
Sphaeralcea ambigua	globemallow	FA, CBS, DW	N	X	X		
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**						
Abronia villosa var. *vilosa*	desert sand verbena	CBS, DW	N		X	X	X
Allionia incarnata	trailing windmills	DW	N	X			
ONAGRACEAE	**EVENING-PRIMROSE FAMILY**						
Camissonia boothii	woody bottle washer	CBS, DW	N		X	X	X
Camissonia claviformis spp. *peirsonii*	Peirson's browneyes	FA, CBS, DW	N	X	X	X	X
Oenothera deltoides	dune primrose	CBS, DW	N		X	X	X
OROBANCHACEAE	**BROOM-RAPE FAMILY**						
Orobanche cooperi	broom-rape	DW	N		X	X	

TABLE 4
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2	IVN
ANGIOSPERMS: DICOTS (CONT.)							
PLANTAGINACEAE	**PLANTAIN FAMILY**						
Plantago ovata	Indian wheat	FA, CBS, DW	N	X	X	X	X
POLEMONIACEAE	**PHLOX FAMILY**						
Langloisia setosissima var. setosissima	langloisia	CBS	N		X	X	
POLYGONACEAE	**BUCKWHEAT FAMILY**						
Chorizanthe brevicornu	brittle spineflower	CBS	N		X		
Chorizanthe corrugata	wrinkled spineflower	CBS	N			X	
Chorizanthe rigida	rigid chorizanthe	CBS	N	X	X	X	X
Eriogonum deflexum	skeleton weed	CBS, DW	N		X	X	X
Eriogonum deserticola	dune buckwheat	CBS, DW	N		X	X	X
Eriogonum inflatum	desert trumpet	CBS, DW	N			X	
Eriogonum thomasii	Thomas's buckwheat	CBS, DW	N		X	X	
PORTULACACEAE	**PURSLANE FAMILY**						
Calandrinia ambigua	dead man's fingers	FA, CBS	N		X	X	
RAFFLESIACEAE	**RAFFLESIA FAMILY**						
Pilostyles thurberi	Thurber's pilostyles	FA, DW	N	X			
RESEDACEAE	**MIGNONETTE FAMILY**						
Oligomeris linifolia	narrowleaf oligomeris	FA, CBS, DW	N	X	X	X	X
SOLANACEAE	**NIGHTSHADE FAMILY**						
Datura wrightii	Jimson weed, thorn-apple	FA	N	X			
Lycium parishii / L. brevipes	Parish's desert-thorn, Baja desert-thorn	DW	N		X	X	
TAMARICACEAE	**TAMARISK FAMILY**						
Tamarix aphylla	athel	TT	I	X			
Tamarix ramosissima	salt cedar	FA, DW, TT	I	X	X	X	X
ZYGOPHYLLACEAE	**CALTROP FAMILY**						
Larrea tridentata	creosote bush	FA, CBS, DW	N	X	X	X	X

TABLE 4
PLANT SPECIES OBSERVED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA DURING SPRING 2010 SURVEYS (CONT.)

Scientific Name	Common Name	Habitat	Origin	R-1	IVW-1	IVW-2	IVN
ANGIOSPERMS: MONOCOTS							
LILIACEAE	**LILY FAMILY**						
Hesperocaulis undulata	desert lily	DW	N		X	X	
POACEAE (GRAMINEAE)	**GRASS FAMILY**						
Cynodon dactylon	Bermuda grass	AT	I	X			X
Pleuraphis [=Hilaria] *rigida*	big galleta grass	DW	N	X	X	X	
Polypogon monspeliensis	rabbit foot grass	FA	I	X			
Schismus barbatus	Mediterranean grass	FA, CBS, DW	I	X	X	X	X

HABITATS
AG = Agriculture
AT = Arrow-weed thicket
CBS = Creosote bush–white burr sage scrub
DW = Desert wash
FA = Fallow Agriculture
MT = Mesquite thicket
OW = Open water
TT = Tamarisk thicket

ORIGIN
N = Native to locality
I = Introduced species from outside locality

4.2 Special Status Plant Species

There are a number of special status plant species that are known from the vicinity of the project area. Appendix A lists all species known from the vicinity that are listed by the federal or state government as threatened or endangered, or are listed as sensitive by BLM or the State of California as a species of special concern along with a more detailed analysis of the potential of these species to occur in the survey area. Locations of special status plant species found during the surveys are presented in Figures 4a and b.

4.2.1 Federally Listed Species

Based on the literature review, one federally threatened plant species, Peirson's milkvetch (*Astragalus magdalena* var*. peirsonii*), was identified as having the potential to occur within the survey area. Critical habitat has been designated [and revised] for this species in the Algodones Dunes (USFWS 2008), which are located approximately 50 miles east of the project area. This species was not observed during focused spring rare plant surveys and is not expected to occur based on elevation and range restrictions (see Appendix A).

4.2.2 State-listed Species

There were three state-listed species identified during the literature review as having the potential to occur within the survey area: Algodones Dunes sunflower (*Helianthus niveus* ssp. *tephrodes*), Wiggins' croton (*Croton wigginsii*), and Peirson's milkvetch (see Appendix A). These species were not observed during focused spring rare plant surveys and/or are not expected to occur within the survey area based on elevation and the lack of suitable habitat.

4.2.3 BLM Sensitive Species

BLM sensitive species include all species currently on California Native Plant Society (CNPS) List 1B, as well as others that are designated by the California BLM State Director. Several BLM sensitive species were identified as having the potential to occur within the survey area (see Appendix A). These species were not observed during focused spring rare plant surveys and either have a low potential to occur or are not expected to occur within the survey area based on elevation and the lack of suitable habitat.

4.2.4 Priority Plant Species

Priority plant species are rare, unusual, or key species that are not sensitive by BLM or

listed as threatened and endangered. Priority plant species are specifically plants that are included on the CNPS Lists 2–4. A number of priority plant species have the potential to occur within the survey area based on presence of species within the vicinity of the area (State of California 2010b) or based on the presence of suitable habitat (Appendix A).

Four priority plant species were observed within the survey area and vicinity during spring rare plant surveys, including brown turbans (*Malperia tenuis*), Salton milkvetch (*Astragalus crotolariae*), Thurber's pilostyles (*Pilostyles thurberi*), and Parish's desert-thorn (*Lycium parishii*). These species are discussed below. Two additional species, Abram's sandmat (*Chamaesyce abramsiana*) and devil's claw (*Proboscidea althaeifolia*), have potential to occur within the survey area. These species bloom in the fall and were not detected by the spring surveys. An additional survey is planned for fall 2010 in order to evaluate the presence or absence of these species in the survey area.

Brown turbans (*Malperia tenuis*). Brown turbans is a CNPS (2001) List 2 species. It is an inconspicuous annual herb in the sunflower family (Asteraceae) that grows less than 16 inches tall with pink-tinged to brownish flowers that bloom March to April and in December (Baldwin et. al. 2002; Munz 1974). Its range is the Sonoran desert in San Diego and Imperial counties and northern Baja California, Mexico. It grows in creosote bush scrub below 1,100 feet (CNPS 2001), on arid slopes with shallow soils and rocky surface rubble, volcanic flats and slopes, and on rocky ridges (Reiser 2001). The presumed rarity of this species may be due to under-reporting of the cryptic plant (Reiser 2001).

As seen on Figure 4a, two individual brown turbans plants were observed during spring rare plant surveys, one within the IVW-2 corridor and another just outside of the corridor. These plants were found within the creosote bush–white burr sage scrub vegetation with a soil surface layer of dense desert pavement (Photographs 6 and 7).

PHOTOGRAPH 6
IVW-2: Brown Turbans

PHOTOGRAPH 7
IVW-2: Brown Turbans Habitat

Salton milkvetch (*Astragalus crotalariae*). Salton milkvetch is a CNPS List 4 species. It is a robust, malodorous, short-lived perennial herb in the legume family (Fabaceae) that flowers from January to April (Munz 1974). It is distributed at elevations between 200 and 800 feet in the Sonoran Desert of Arizona, California, and Baja California. It prefers to grow in barren, sandy areas with mild soil disturbance (Reiser 2001). Salton milkvetch was found at one location within the IVW-1 corridor and another location adjacent to, but outside of the IVW-2 corridor (Figure 4a and Photograph 8). At both locations, this species was within the Yuha Wash encompassed by desert wash vegetation.

PHOTOGRAPH 8
IVW-1: Salton Milkvetch

Thurber's pilostyles (*Pilostyles thurberi*). Thurber's pilostyles is a CNPS List 4 species. It is a perennial stem-parasite in the rafflesia family (Rafflesiaceae) that shows only its flowers and bracts on the stem of its host plant. The brown or maroon flowers are less than 1/10 inch across and bloom in January. The host plant is an indigo bush (*Psorothamnus* spp.), usually Emory's indigo bush (*P. emoryi*). While Emory's indigo bush occurs in both the southern Mojave and Sonoran deserts, in California Thurber's pilostyles is limited to the southern Sonoran Desert in Riverside, San Diego, and Imperial counties, where it occurs in open desert scrub below 1,000 feet. Thurber's pilostyles also occurs in Baja California and as far east as Texas (Baldwin et al. 2002).

PHOTOGRAPH 9
R-1: Thurber's Pilostyles Parasitizing Emory's Indigo Bush

Thurber's pilostyles was observed on 49 Emory's indigo bush shrubs located within and adjacent to a desert wash in the southern half of the proposed solar field (see Figure 4a; Photograph 9).

Parish's desert-thorn (*Lycium parishii*). Parish's desert-thorn is a CNPS List 2 species. It is an intricately branched spiny shrub in the nightshade family (Solanaceae) that may grow 10 feet tall and produces purplish tubular flowers in March and April (Munz 1974). Parish's desert thorn is found from Sonora, Mexico, and Arizona to Riverside, Imperial, and eastern San Diego counties; it is thought to be extirpated from the San Bernardino Valley (Munz 1974; CNPS 2001). The habitat for Parish's desert-thorn is sandy to rocky slopes in creosote-bush desert scrub at elevations below 3,300 feet. It may occur in coastal scrub habitat as well (CNPS 2001).

PHOTOGRAPH 10
IVW-2: Parish's Desert-thorn

The desert-thorn plants that were observed in the survey area and vicinity (see Figure 4a) exhibited intermediate morphological characteristics between *L. parishii* and *L. brevipes*. Flowers were observed (on individual and separate plants) with 4 and 5 petals, which is characteristic of *L. brevipes*. However, the plants were very intricately branched, which is characteristic of *L. parishii* (Photograph 10), as opposed to spreading branches, as in *L. brevipes*. In order to be conservative, we have treated this species as *L. parishii*.

Parish's desert-thorn was found at two locations in the vicinity of the survey area near IVW-1 and IVW-2 (see Figure 4a). At both locations, this species was within the Yuha Wash encompassed by desert wash vegetation.

5.0 Potential Project Impacts and Recommended Mitigation

Four priority plant species were observed within the survey area and vicinity during spring rare plant surveys, including brown turbans (*Malperia tenuis*), Salton milkvetch (*Astragalus crotolariae*), Thurber's pilostyles (*Pilostyles thurberi*), and Parish's desert-thorn (*Lycium parishii*). These species were observed in association with the Yuha Wash as well as a smaller wash that bisects the southern half of R-1.

These species should be avoided where practicable. If impacts are unavoidable, individual plants should be relocated, when appropriate, or included as part of the restoration palette for temporary or permanent impacts. Restoration standards, including potential transplantation and other conservation measures should be developed in coordination with the BLM and other state and/or federal agencies as appropriate.

7.0 Additional Surveys Recommended

Although the majority of the special status plant species that have the potential to occur within the survey area would have been apparent during the Spring 2010 survey effort, there are a few species, such as Abram's sandmat (*Chamaesyce abramsiana*) and devil's claw (*Proboscidea althaeifolia*), which actively grow and bloom in the late summer and fall (see Appendix A). An additional rare plant survey is planned for Fall 2010 in order to potentially detect these species. This survey will follow the "Intuitive Controlled Survey" protocol (BLM 2009) to target the habitats in which these species would be found, if present.

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APPENDICES

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APPENDIX A

SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA

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APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Amaranthaceae—Amaranth Family								
Amaranthus watsonii Watson's amaranth	-/-	4.3	-	Annual herb; blooms in spring; creosote bush scrub and wetlands.	Potential to occur within canal along the east edge of the survey area.	Not expected to occur due to lack of suitable wetland habitat.		Potential to occur within canal along the east edge of the survey area.
Asclepiadaceae—Milkweed Family								
Cynanchum utahense Utah vine milkweed	-/-	4.3	-	Perennial herb; blooms April–June; creosote bush scrub; <3,281 ft.	Not expected to occur. This perennial herb would have been observed during spring focused surveys.			
Asteraceae—Sunflower Family								
Chaenactis carphoclina var. peirsonii Peirson's pincushion	-/-	1B.3	BLM Sensitive	Annual herb; blooms March–April; creosote bush scrub; <1,640 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Helianthus niveus ssp. *tephrodes* Algodones Dunes sunflower	-/CE	1B.2	BLM Sensitive	Perennial herb; blooms March–May; dunes; <328 ft.	Not expected to occur. No suitable dune habitat is present within the survey area. In addition, this perennial herb would have been observed during spring focused surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Asteraceae—Sunflower Family (cont.)								
Malperia tenuis **brown turbans**	**-/-**	**2.3**	**-**	**Annual herb; blooms April and Dec; Sonoran desert scrub; sandy areas and rocky slopes; <1,640 ft.**	Not expected to occur. No suitable desert pavement habitat is present for this species.	High potential to occur. This species was observed within the adjacent IVW-1 corridor.	**Observed. One individual was observed in upland creosote scrub/desert pavement within the survey area.**	Moderate potential to occur. This species was observed within the adjacent IVW-1 corridor.
Palafoxia arida var. *gigantea* giant Spanish needles	-/-	1B.3	BLM Sensitive	Dunes	Not expected to occur. No suitable dune habitat is present within the survey area. In addition, this perennial herb would have been observed during spring focused surveys.			
Xylorhiza cognata Mecca aster	-/-	1B.2	BLM Sensitive	Perennial herb; blooms Jan–June; creosote bush scrub; canyons; 65–787 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Xylorhiza orcuttii Orcutt's woody aster	-/-	1B.3	BLM Sensitive	Perennial herb; blooms March–April; creosote bush scrub; canyons; 65–984 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Boraginacaeae - Borage Family								
Cryptantha costata ribbed cryptantha	-/-	-	4.3	Annual herb; blooms Feb–May; creosote bush scrub, sandy soil; <1,640 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Cryptantha holoptera winged cryptantha	-/-	-	4.3	Annual herb; blooms March–April; creosote bush scrub, sandy soil; 328–3,937 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Brassicaceae—Mustard Family								
Lyrocarpa coulteri var. *palmeri* Coulter's lyrepod	-/-	-	4.3	Perennial herb; blooms April–Dec; creosote bush scrub; dry slopes, gravelly flats, and washes; <1,969 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Cactaceae—Cactus Family								
Cylindropuntia echinocarpa [=Opuntia wigginsii] Wiggins' cholla	-/-	3.3	-	Shrub; creosote bush scrub.	Not expected to occur. This species would have been observed during focused rare plant surveys.			
Cylindropuntia wolfii [=Opuntia wolfii] Wolf's' cholla	-/-	4	-	Shrub; blooms April-May; Alluvial fans and rocky slope in Sonoran desert scrub	Not expected to occur. This species would have been observed during focused rare plant surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Euphorbiaceae—Spurge Family								
Chamaesyce abramsiana Abram's sandmat	-/-	2.2	-	Annual herb; blooms Sept–Nov; creosote bush scrub; <656 ft.	Potential to occur. This annual herb would not have been observed during spring focused surveys.			
Chamaesyce arizonica Arizona sandmat	-/-	2.3	-	Perennial herb; blooms March–April; creosote bush scrub; <984 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Chamaesyce platysperma flat-seeded spurge	-/-	1B.2	BLM Sensitive	Annual herb; blooms May; dunes & sandy areas; <328 ft.	Low potential to occur. This annual herb would have been observed during spring focused surveys.			
Croton wigginsii Wiggins' croton	-/CR	2.2	BLM Sensitive	Shrub; blooms March–April; creosote bush scrub; dunes; <328 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Ditaxis serrata var. *californica* California ditaxis	-/-	3.2	-	Perennial herb; blooms April–Nov; creosote bush scrub; <656 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Tetracoccus hallii	-/-	4.3	-	Shrub; blooms March–May; creosote bush scrub; rocky slopes and washes; <3,937 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Fabaceae—Legume Family								
Astragalus crotolariae **Salton milkvetch**	**-/-**	**4.3**	**-**	**Perennial herb; blooms Jan–April; creosote bush scrub; 60–250 ft.**	Potential to occur within the desert wash vegetation in the southern half of this survey area.	**Observed. 3 individuals observed within the desert wash vegetation.**	Potential to occur within the desert wash vegetation in this survey area.	Low potential to occur due to the lack of sandy desert wash vegetation.
Astragalus insularis var. *harwoodii* Harwood's milkvetch	-/-	2.2	-	Annual herb; blooms Jan–May; desert dunes; open sandy flats or stony desert washes; mostly in creosote bush scrub.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Astragalus lentiginosus var. *borreganus* Borrego milkvetch	-/-	4.3	-	Annual herb; blooms March–May; creosote bush scrub, sandy areas; 98–820 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			
Astragalus magdalena var. *peirsonii* Peirson's milkvetch	FT/CE	1B.2	BLM Sensitive	Perennial herb; blooms Dec–April; dunes; 164–656 ft.	Not expected to occur. There is no suitable dune habitat within the survey area. In addition, this perennial herb would have been observed within the survey area during focused rare plant surveys.			
Lotus haydonii pygmy lotus	-/-	1B.3	BLM Sensitive	Perennial herb; blooms March–June; creosote bush scrub; 1,969–3,937 ft.	Low potential to occur. This perennial herb would have been observed during spring focused surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Fabaceae—Legume Family (cont.)								
Lupinus excubitis var. *medius* Mountain Springs bush lupine	-/-	1B.4	BLM Sensitive	Shrub; blooms March–April; creosote bush scrub; desert washes; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Parkinsonia microphylla [=Cercidium microphyllum] yellow paloverde	-/-	4.3	-	Tree; blooms April–May; creosote bush scrub.	Not expected to occur. This tree would have been observed during focused rare plant surveys.			
Lamiaceae—Mint Family								
Salvia greatae lavender sage	-/-	1B.3	BLM Sensitive	Shrub; blooms March–April; creosote bush scrub; alluvial slopes; 98–787 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Teucrium cubense ssp. *depressum* small coastal germander	-/-	2.2	-	Annual herb; blooms March–May; creosote bush scrub, sandy areas; <797 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Lennoaceae—Sand Food Family								
Pholisma sonorae sandfood	-/-	1B.2	BLM Sensitive	Perennial parasitic herb; blooms April–May; dunes; <656 ft.	Not expected to occur. There is no suitable dune habitat within the survey area. In addition, this species would have been observed within the survey area during spring focused rare plant surveys.			

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SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Loasaceae—Blazing Star Family								
Mentzelia hirsutissima hairy stickleaf	-/-	2.3	-	Annual herb; blooms April–May; creosote bush scrub; washes, fans, and slopes; <1,969 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Mentzelia tridentata dentate blazing star	-/-	1B.3	BLM Sensitive	Annual herb; blooms April–May; creosote bush scrub; 2,296–3,280 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Malvaceae—Mallow Family								
Horsfordia alata pink velvet mallow	-/-	4.3	-	Shrub; blooms April and Nov–Dec; creosote bush scrub; rocky canyons and washes; 328–1,640 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Horsfordia newberryi Newberry's velvet mallow	-/-	4.3	-	Perennial herb; blooms March–April and Nov–Dec; creosote bush scrub; 328–2,625 ft.	Low potential to occur. This perennial herb would have been observed during spring rare plant focused surveys.			
Herrisantia crispa bladder mallow	-/-	2.3	-	Annual or perennial herb; creosote bush scrub.	Low potential to occur. This species would have been observed during spring rare plant focused surveys.			

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SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Martyniaceae—Unicorn Plant Family								
Proboscidea althaeifolia devil's claw	-/-	4.3	-	Perennial herb; blooms in fall; creosote bush scrub; <3,281 ft.	Potential to occur in desert wash habitat within the survey area.			
Nyctaginaceae - Four O'Clock Family								
Mirabilis tenuiloba slender lobed four o'clock	-/-	4.3	-	Perennial herb; blooms March–May; creosote bush scrub; rocky slopes; <1,640 ft.	Low potential to occur. This perennial herb would have been observed during spring rare plant focused surveys.			
Onagraceae—Evening Primrose Family								
Camissonia arenaria Fortuna Range suncup	-/-	2.2	-	Annual or perennial herb; creosote bush scrub; rocky slopes; <1,411 ft.	Low potential to occur. This herb would have been observed during spring rare plant focused surveys.			
Polemoniaceae—Phlox Family								
Ipomopsis tenuifolia slenderleaf skyrocket	-/-	2.3	-	Perennial herb; blooms March–May; creosote bush scrub; gravelly to rocky slopes and canyons; 328–3,937 ft.	Low potential to occur. This perennial herb would have been observed during spring rare plant focused surveys.			
Poaceae—Grass Family								
Imperata brevifolia satintail	-/-	2.1	-	Perennial grass; blooms Sept–May; creosote bush scrub; <1,640 ft.	Not expected to occur. This perennial rhizomatous grass would have been observed during focused rare plant surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Polemoniaceae—Phlox Family								
Ipomopsis effusa Baja California ipomopsis	-/-	2.1	-	Annual herb; alluvial fans.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Polygonaceae—Knotweed Family								
Nemacaulis denudata var. *gracilis* slender woolly heads	-/-	2.2	-	Annual herb; blooms March–May; dunes; <1,312 ft.	Low potential to occur. This annual herb would have been observed during spring focused rare plant surveys.			
Rafflesiaceae—Rafflesia Family								
***Pilostyles thurberi* Thurber's pilostyles**	**-/-**	**4.3**	**-**	**Perennial herb (parasitic); blooms January; Sonoran desert scrub; sandy alluvial plains; <984 ft.**	**Observed. Detected on 49 indigo-bush (*Psorothamnus emoryi*) shrubs within the survey area.**	Potential to occur on the few indigobush shrubs within the survey area.		Not expected to occur. No indigobush was observed within the survey area.
Rhamnaceae—Buckthorn Family								
Colubrinia californica	-/-	2.3	-	Shrub; blooms April–May; creosote bush scrub; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Condalia globosa var. *pubescens* spiny crucillo	-/-	4.2	-	Shrub; blooms March–April; creosote bush scrub; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			

APPENDIX A
SPECIAL STATUS PLANT SPECIES OBSERVED OR WITH THE POTENTIAL FOR OCCURRENCE IN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA (CONT.)

Family/Species	Federal /State Status	CNPS List	BLM Status	Habit, Habitat, and Blooming Period	Likelihood of Occurrence			
					IV West (R-1)	IVW-1	IVW-2	IVN
Selaginellaceae—Spikemoss Family								
Selaginella eremophila desert spike moss	-/-	2.2	-	Perennial fern; creosote bush scrub; shaded crevices and rocky places; <2,953 ft.	Low potential to occur. This perennial herb would have been observed during spring focused rare plant surveys.			
Solanaceae—Nightshade Family								
Lycium parishii Parish's desert thorn	-/-	2.3	-	Shrub; blooms March–April; Sonoran desert scrub; sandy–rocky slopes and canyons; <3,281 ft.	Not expected to occur. This perennial shrub would have been observed during focused rare plant surveys.			
Sterculiaceae—Cocoa Family								
Ayenia compacta desert ayenia	-/-	2.3	-	Perennial herb/shrub; blooms March–April; washes and dry rocky canyons; <1,640 ft.	Low potential to occur. This perennial herb would have been observed during spring focused rare plant surveys.			

FEDERAL LISTED PLANTS

FT = Federally listed threatened

STATE-LISTED PLANTS

CE = State-listed endangered
CR = State-listed rare

CALIFORNIA NATIVE PLANT SOCIETY LISTS

1A = Species presumed extinct.
1B = Species rare, threatened, or endangered in California and elsewhere; eligible for state listing.
2 = Species rare, threatened, or endangered in California but more common elsewhere; eligible for state listing.
3 = Species for which more information on distribution, endangerment, and/or taxonomic information is needed.
4 = A watch list of species of limited distribution, that need to be monitored for changes in population status.

BUREAU OF LAND MANAGEMENT

Sensitive = Identified as BLM sensitive

APPENDIX B

TRACK LOG

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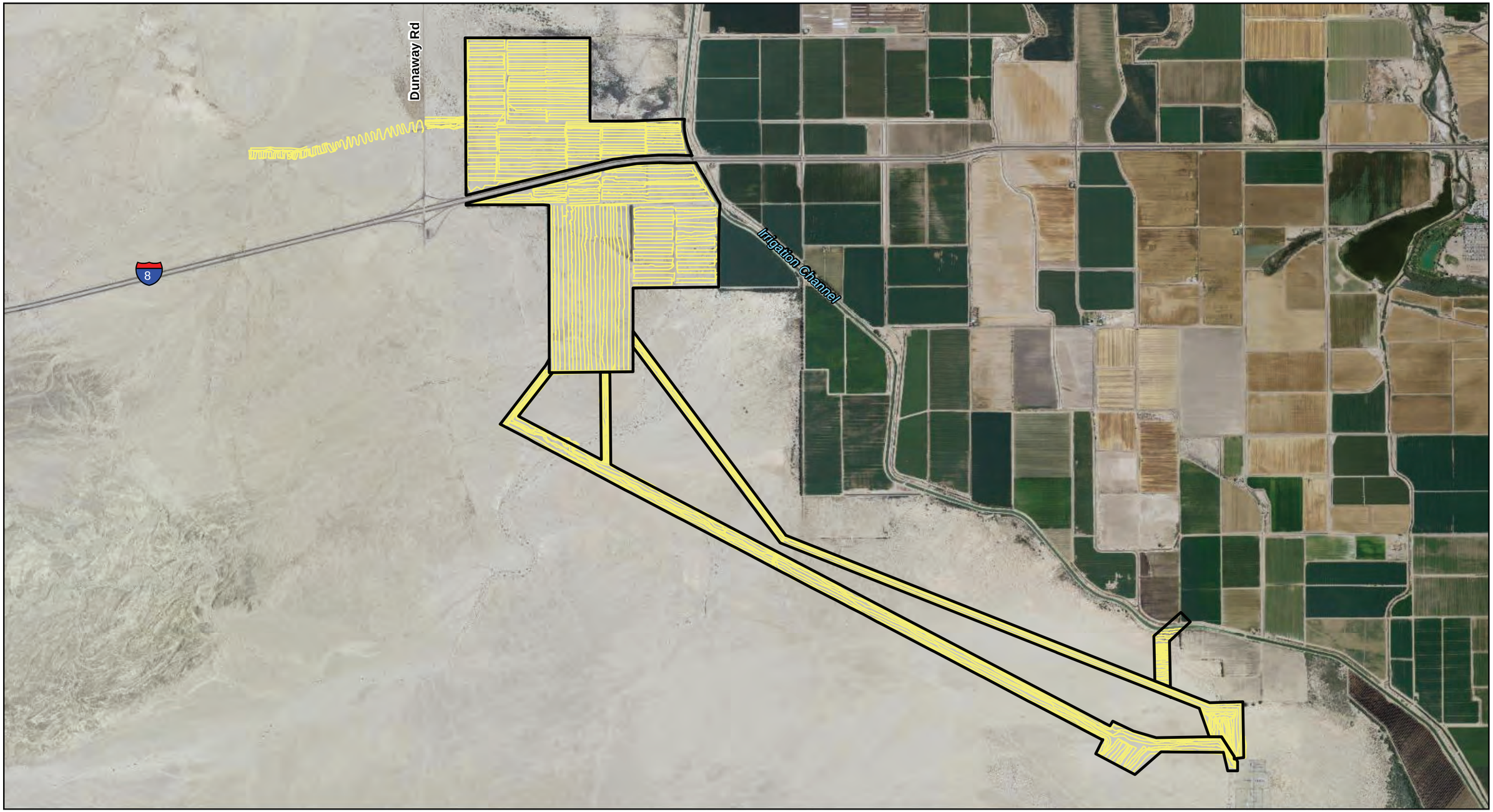
Image Source: CDFG (flown Summer 2009)



Survey Area

Track Logs

0 Feet 3,000

RECON

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APPENDIX B
Tracklogs for March - April Survey Intensive Survey
of the Imperial Solar Energy Center West Project

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APPENDIX C

RESUMES FOR FIELD PERSONNEL

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Carianne Funicelli Campbell
Vegetation Ecologist

Highlights

- ✓ Excellent relationships with local, state, and federal resource and regulatory agencies
- ✓ Knowledge of ESA and NEPA
- ✓ Design and implementation of habitat restoration projects

Experience:
11 years

Education:
Bachelor of Arts, Botany, Prescott College 1998

Awards:
Prescott College Desert Star 2002

Permits:
USFWS Permit #TE-797665 to conduct focused surveys and nest monitoring under supervision for California Coastal Gnatcatcher, Least Bell's Vireo Nest Monitoring, Stephens' Kangaroo Rat, San Bernardino Kangaroo Rat, Southwestern willow Flycatcher, and Pacific Pocket Mouse.

USFWS Permit #TE-103480 for conduct independent surveys for Cactus Ferruginous Pygmy-Owl, Desert Tortoise, Chiricahua leopard frog and Sonora tiger salamander

Experience Summary

Ms. Campbell specializes in developing vegetation ecology methodologies, designing habitat restoration projects, and completing NEPA and Endangered Species Act (ESA) documents for a variety of federal, state, and local agencies. Ms. Campbell has extensive experience surveying and documenting plant species and communities in Arizona, New Mexico, Colorado, Nevada, and California. She makes appropriate native plant landscaping recommendations, prepares native plant preservation plans, designs habitat restoration projects including maintenance and monitoring plans, and communicates findings with various clients and natural resource agencies on a project-specific level.

Shell Canyon Mine Expansion Area Rare Plant Survey, Ocotillo, CA

Ms. Campbell conducted Fall 2009 and Spring 2010 surveys for rare plants at this 14-acre mine exapnsion site in the Lower Colorado River subdivision of the Sonoran Desert.

BLM Yuma Field Office Draft and Final Resource Management Plan (RMP) and Draft Environmental Impact Statement (EIS), Yuma, AZ

Ms. Campbell provided document review support and comment resolution during the production of this document, with particular attention to Chapter 3, Affected Environment. She attended an Interdisciplinary Team Meeting and provided input focused on vegetation resources. In addition, she developed a database to analyze nearly 1,500 public comments and identify public concerns for the BLM to address in the Final RMP/EIS.

Algodones Dunes Threatened and Endangered Plant Survey, CA

Ms. Campbell was a project biologist for a rare plant survey on the Algodones Dunes for the Imperial Irrigation District. She located dozens of individuals of rare plants, including sand food, Peirson's milkvetch, Algodones Dunes sunflower, Wiggin's croton, and giant Spanish needle.

The Eglington Preserve Road Restoration, North Las Vegas, NV

Ms. Campbell is working with the The Nature Conservancy to restore approximately 20 acres of upland and wash habitat directly impacted by illegal off-highway vehicle (OHV) use at The Eglington Preserve (Preserve), located in the Upper Las Vegas Wash in North Las Vegas, Nevada. The restoration plan includes detailed specifications for all aspects of project implementation (including site preparation, topsoil and gravel salvage, biological crust salvage, seed collection and plant propagation, invasive species management, and installation) as well as maintenance and monitoring programs. Disturbance levels in the restoration areas range from minimal to extreme, and restoration prescriptions vary accordingly. Special site considerations include the presence of sensitive natural resources, including rare plants, paleontological resources, and desert tortoise habitat.

Riparian Plant Identification Handbook, Pima County, AZ

Ms. Campbell developed a Riparian Plant Identification Handbook for Pima County Regional Flood Control District (PCRFCD). The guide included 50 common perennial plants of riparian areas in Pima County, and was intended to assist non-botanists, specifically PCRFCD personnel, in the field assessment of riparian habitat mitigation implementation through proper identification of native and non-native species.

Invasive Species Management Program for the Marana Habitat Conservation Plan, Marana, AZ

RECON is preparing this HCP to support the Town of Marana's (Town) application to the USFWS for an Incidental Take Permit in conformance with Section 10(a)(1)(B) of the Federal ESA. The HCP will commit the Town to implement certain conservation actions that will avoid, minimize, and/or mitigate the impacts on specified species that could occur as a result of planned urban development and associated capital improvement projects expected to occur within the Town over the next 25 years. As part of the HCP implementation documentation, Ms. Campbell developed an Invasive Species Management Program for the planning area.

Biological Monitoring and Habitat Restoration Plan for the Lukeville Border Fence Project, Organ Pipe Cactus National Monument, AZ

Ms. Campbell served as project manager for the biological monitoring and restoration planning portion of this border fence project that traverses approximately five miles of environmentally sensitive lands at Organ Pipe Cactus National Monument. The USFWS Biological Opinion also requires 86 acres of Organ Pipe Cactus National Monument be restored as off-site mitigation for impact of the project on habitat and food plants for the lesser long-nosed bat. Ms. Campbell worked closely with NPS personnel to prepare the restoration plan for this effort.

Visitor Center Landscape Rehabilitation, Carlsbad Caverns National Park, Carlsbad, NM

Ms. Campbell served as the project manager for the installation of an underground irrigation system and over 2,000 native plants at the entrance of the new visitor center. Several mature plants were salvaged from areas using hand tools and large machinery as appropriate. The project occurred in an area of high visitor traffic, requiring frequent professional contact.

Cactus Forest Loop Road Revegetation, Saguaro National Park, Tucson, AZ

Ms. Campbell orchestrated the revegetation of over 100 sites after a repaving project at Saguaro National Park. The project involved the planting of over 3,000 salvaged and seed-grown native plants in a manner to match the surrounding landscape as closely as possible. Areas were hand-broadcast with locally-collected seed and plant materials were carefully tracked, including repeat photography, so that National Park Service (NPS) staff can continue to monitor the sites over time. Ms. Campbell prepared and implemented a project specific health and safety plan, and served as the project manager and health and safety officer.

Selected Papers and Presentations

Desert Horticulture Conference, 13th Annual Conference, May 2004. Threats to Urban Saguaros. Joint presentation with E. A. Pierson. Desert Horticulture Conference, 15th Annual Conference, May 2006. Invasive Horticultural Plants. Joint presentation with B. Worthington and T. Bean.

Ecological Society of America, 87th Annual Meeting, August 2002. “Survival evaluation of transplanted saguaros in an urban

housing development and golf course development." Tucson, Arizona.

Funicelli, C.S., P.J. Anning, and D.S. Turner. 2001. Long-term vegetation monitoring at Saguaro National Park: a decade of change. Technical Report No. 70, USGS Biological Resource Division, University of Arizona. 53 pp.

Harris, L.K., E.A. Pierson, C.S. Funicelli, W.W. Shaw, S. Morales, K. Hutton, and J. Ashbeck. 2004. Long-term study of preserved and transplanted saguaros in an urban housing and golf course development. *Desert Plants* 20(1): 33 – 42.

Southwestern Vegetation Management Association, 2006 Annual Conference, November 2006. Grow Native: Don't Plant a Pest. Casa Grande, Arizona.

Turner, D.S. and C.S. Funicelli. 2004. Demographic changes and epidermal browning in two protected populations of saguaro cactus (*Carnegiea gigantea*). *Desert Plants* 20(1): 16 – 23.

Rosen, P.C. and C.S. Funicelli. 2009. Conservation of Urban Amphibians in Tucson. Part I. *Sonoran Herpetologist* 22(10): 106 - 110.

Rosen, P.C. and C.S. Funicelli. 2009. Conservation of Urban Amphibians in Tucson. Part II. *Sonoran Herpetologist* 22(11): 118 - 122.

Hanson, M., D. Siegel, C. Funicelli, and A. Olsson. 2009. Sonoran Desert Weedwackers: A Model for Controlling the Spread of Invasive Grasses. *In* Van Devender, T.F., F.J. Espinosa-Garcia, B.L. Harper-Lore. and T. Hubbard (eds). Invasive Plants on the Move: Controlling Them in North America. Based on Presentations from Weeds Across Borders 2006 Conference in Hermosillo, Mexico, May 25-29, 2006. Arizona-Sonora Desert Museum, Tucson, Arizona.

Cheri Bouchér
Senior Biologist

Experience Highlights
- ✓ Project management
- ✓ Knowledge of local biological resources
- ✓ Biological mitigation site monitoring

Experience:

13 years

Education:

B.S. Environmental Resource Management/Range Ecology, Arizona State University

Permits:

USFWS Permit #TE-797665 to independently conduct surveys for Cactus Ferruginous Pygmy-Owl, Coastal California Gnatcatcher, Quino Checkerspot Butterfly, Vernal Pool Branchiopods, Endangered Vernal Pool and Upland Plants; under supervision for Coastal California Gnatcatcher and Least Bell's Vireo nest monitoring, Southwestern Willow Flycatcher and nest monitoring, Stephens' Kangaroo Rat, San Bernardino Kangaroo Rat, and Pacific Pocket Mouse

CDFG Scientific Collecting Permit #006137 for Insects, Rodents/Small Mammals, Reptiles/Amphibians

Experience Summary

Ms. Bouchér manages large and small scale biological resource projects, including the identification of sensitive biological resources in the field, the evaluation of project impacts on sensitive biological resources in accordance with CEQA and NEPA, and coordination with resource agencies to ensure efficient project compliance and approval. She conducts general biological assessments; vegetation mapping; focused surveys for endangered, threatened, and sensitive species; and monitoring in a variety of habitats in southern California. She has specific experience in botany, mammalogy, and ornithology, and has performed biological resource monitoring in a variety of habitats including desert habitats in southern California, Nevada, and Arizona.

SDG&E Sunrise Powerlink Species Surveys, San Diego and Imperial County, CA

SDG&E proposed to construct new 120-mile 500kV and 230kV electric transmission line between the existing Imperial Valley Substation and Sycamore Canyon Substation. RECON is conducted several of the plant and wildlife species surveys for this project. Ms. Bouchér is the task manager for the focused rare plant surveys, including Cleveland National Forester's sensitive species.

Mission to San Miguel 230-kV Transmission Line #2 Project, San Diego County, CA

Ms. Bouchér was RECON's lead biologist on this project and conducted general vegetation mapping, presence/absence coastal California gnatcatcher surveys, focused plant surveys, and focused fairy shrimp surveys. In addition, she updated technical reports in support of an environmental assessment for this 35-mile project in San Diego County. A portion of this project crosses Mission Trails Regional Park.

Borrego Airport Biological Survey, Borrego Springs, CA

Ms. Bouchér conducted biological surveys at the Borrego Valley Airport, on an approximately 18-acre parcel located immediately west of the Borrego Valley Airport and five airport improvement locations within the airport. Two

Certifications:

Certified for Flat-Tailed Horned Lizard Surveys, BLM

Annual Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council

Affiliations:

Member, California Native Plant Society (CNPS)

vegetation communities were mapped on-site, including desert saltbush scrub and mesquite bosque. Based on the survey results, a biological resources letter report was prepared outlining the biological impacts for the proposed airport improvements.

SDG&E 230-kV Transmission Line Rebundling Project, San Diego, CA

Ms. Bouchér conducted flat-tail horned lizard (FTHL) surveys and monitoring during rebundling of a 230 kV transmission line from the Imperial Valley Substation to the U.S./Mexico border in Imperial County. The project consisted of replacing the wire on an existing electrical transmission line. As a monitor, Ms. Bouchér assisted SDG&E in avoiding direct impacts to the FTHL and minimizing impacts to the FTHL habitat.

All American Canal Rare Plant and Bird Habitat Assessments, Imperial County, CA

Ms. Bouchér participated in rare plant survey on the Algodones Dunes for the Imperial Irrigation District. She located dozens of individuals of rare plants, including sand food, Peirson's milkvetch, Algodones Dunes sunflower, Wiggin's croton, and giant Spanish needle. She also conducted a habitat assessment for 16 target sensitive bird species within the project boundary of the preferred alignment of the All-American Canal Lining Project. The project area is east of El Centro in Imperial County, California. The habitat assessment consisted of inspecting the vegetation communities, topography, and substrate present within the proposed impact area for the project. Focus species for the habitat assessment included least Bell's vireo, southwestern willow flycatcher, and western burrowing owl.

Iron/Manganese Potable Water Treatment Plant, MCB Camp Pendleton, CA

Ms. Bouchér conducted focused surveys for the federally listed threatened CAGN and various sensitive plant species in accordance with USFWS protocol on this fifty-acre site.

Biological Studies on the Desert Bighorn Sheep Habitat Along the Colorado River, AZ

For the Arizona Game & Fish Department/USFWS Imperial and Cibola Wildlife Refuges, Ms. Bouchér conducted biological studies on the desert bighorn sheep habitat along the Colorado River in southwestern Arizona. The studies focused on feral burrow use of vegetation in the desert bighorn sheep habitat.

Mike Nieto
Project Biologist/Botanist

Experience Highlights

- ✓ Conducts botanical and wildlife surveys
- ✓ Knowledge of local biological resources
- ✓ Vernal Pool wetland delineation
- ✓ Rare plant surveys
- ✓ Arroyo Toad Monitoring
- ✓ Bullfrog control on the Santa Margarita River

Experience

10 years

Education

B.S., General Biology, University of California San Diego, 2000

Permits/ Trainings

Wetland Delineation Training (WTI)

Arid West Supplement Seminar (WTI)

Native Grass Identification (RSABG)

Rare Plants of Cismontane Southern California (RSABG)

SDNHM Native Plant Identification Workshops (Boraginacea, Euphorbiacea)

Affiliations:

California Native Plant Society (CNPS)

Experience Summary

Mr. Nieto is a biologist on RECON's Agency team. He conducts habitat assessments, monitoring, and general surveys in a variety of habitats in southern California. Mr. Nieto specializes in botany, wetland assessments, and herpetology. In addition, he has experience mapping vegetation and sensitive species habitats, monitoring construction activities, and preparing biological technical documentation.

2009 Rare Plant Survey Report for the SDG&E Sunrise Powerlink Project, San Diego and Imperial County, CA

Survey coordination, implementation, and report of CNPS List 1B and 2 rare plants along 120 linear mile transmission line project. Rare plants ranged from Sonoran desert to cismontane foothills.

Draft 2009 Rare Plant Report for the Mountain Springs Grade Segment of the SDG&E Sunrise Powerlink Project, Jacumba, CA

Survey and reporting of CNPS List 1B and 2 rare plants within desert transitional scrub at the Mountain Springs Grade.

Draft 2009 Weed Control Plan for the Environmentally Superior Southern Route of the SDG&E Sunrise Powerlink Project, San Diego and Imperial Counties, CA

Survey coordination, implementation, and report of Cal-IPC moderate and high weeds along 120 linear mile transmission line project. Weed study ranged from Sonoran desert to cismontane foothills.

SDG&E Preactivity Survey Reports (PSR), San Diego, CA

Completed nine SDG&E PSRs in San Diego County.

Environmental Constraints Report for West and Northwest Areas of Montgomery Field Airport, San Diego, CA

Analysis of biological resources and recommendations within a vernal pool complex on a public airfield. City of San Diego.

Jurisdictional Delineation Report for Montgomery Field, San Diego, CA

Vernal pool delineation and classification on a public airfield. City of San Diego.

Draft Biological Technical Report for the MYF Localizer Project at Montogomery Field, San Diego, CA

Impact analysis and mitigation plan for vernal pools and San Diego Fairy Shrimp on Montgomery airfield.

Alvarado Court Sewer Pipe Crossing Accelerated Revegetation/Erosion Control Plan, San Diego, CA

Plan to revegetation urban canyon following sewer replacement. City of San Diego.

Letter Report for the Biological Resources Monitoring for the Borrego Valley Improvement Sites, San Diego, CA

Construction monitoring report for airfield improvements in Borrego Valley. County of San Diego.

Arroyo Toad Monitoring, MCB Camp Pendleton, CA

Mark-Release-Recapture (MRR) studies on Santa Margarita River, MCB Camp Pendleton. Construction monitoring, pit fall trap and drift fence installation, Passive Integrated Transponder (PIT) tag installation.

Gerry Scheid
Senior Biologist/Permitting Specialist

Highlights

- ✓ Expertise in wetland delineations, and USACE and CDFG permitting
- ✓ Excellent relationships with resource and regulatory agencies
- ✓ Understanding of local biological resources

Experience

27 years

Education

M.S., Ecology, San Diego State University, 1986

B.S., Biology, Arizona State University, 1979

Permits/ Certifications& Trainings

USFWS Permit # TE-797665 to independently collect Endangered Vernal Pool and Upland Plants; under supervision for Coastal California Gnatcatcher and vernal pool branchiopod surveys

CDFG Scientific Collector's Permit for Rare and Endangered Plants

County of San Diego Approved CEQA Consultants List - Biological Resources

Wetland Delineation in Southern California Training, Southern California Chapter of The Wildlife Society

Arid West Supplement Training, Wetland Training Institute

Experience Summary

Mr. Scheid specializes in wetlands issues, conducts jurisdictional wetland delineations according to U.S. Army Corps of Engineers (USACE) methodologies, and has assisted clients in securing project approvals from USACE under nationwide permits and individual permits under Section 404 of the Clean Water Act, CDFG under Section 1600 of the Fish and Game Code, and from the Regional Water Quality Control Board under Section 401 of the Clean Water Act. He plays a major role in all phases of the permit process, from the preparation of biological assessments as part of Section 7 consultations with the USFWS, to preparing permit applications, and negotiating with state and federal agencies.

Mr. Scheid has delineated wetlands and atypical wetlands according to USACE methods, including using the recent interim supplement for the arid west, assessed USACE jurisdiction over non-wetland waters of the U.S. using the significant nexus analysis, and prepared mitigation plans according to USACE guidelines. He maintains an excellent working and negotiating relationship with regulatory staff, and his field surveys, delineations, maps, applications, and written documents are well respected.

Sunrise Powerlink Rare Plants Surveys, San Diego, CA

SDG&E proposed to construct a new electric transmission line between the existing Imperial Valley Substation and Sycamore Canyon Substation and other related system modifications. The entire project traverses approximately 120 miles between the El Centro area of Imperial County and southwestern San Diego County. Mr. Scheid is conducting rare plant surveys at designated locations along the route.

Superior Ready Mix Rock Fall Wetland Delineation, San Diego

This project involved an accidental rock fall that resulted in impacts to the San Diego River and City of San Diego sewer line at the Superior Ready Mix quarry in Mission Gorge. Mr. Scheid conducted biology resource surveys and a wetland delineation, and prepared the associated technical reports. Mr. Scheid prepared after the fact permits (i.e., 404, 401, 1603, Section 7 ESA) and

negotiated with the resource agencies. A mitigation plan for the creation and restoration of riparian wetland habitats on the San Diego River was also prepared. San Diego.

Wetland Delineation for MILCON P-010/030, MCB Camp Pendleton, CA

Mr. Scheid conducted a jurisdictional wetland and waters of the U.S. delineation on the Santa Margarita River according to USACE Guidelines for alternative alignments of a proposed levee and spur dikes. Mr. Scheid used the hydrogeomorphic model (HGM) to derive the relative habitat values to be used in the envelopment of mitigation options.

RiverPark Project, San Diego, CA

This proposed project was the redevelopment of a sand/rock quarry to a mixed-use (i.e., residential, commercial, open space) located adjacent to the San Diego River. Mr. Scheid conducted biological resource surveys, wetland resource surveys, focused sensitive species surveys, and prepared the report.

Santa Margarita Creek Wetland Delineation, MCB Camp Pendleton, CA

Mr. Scheid conducted a comprehensive wetland delineation along levees of Santa Margarita Creek to be used in the subsequent 404 permitting process.

Town and Country Hotel Parking Lot Expansion, San Diego, CA

Mr. Scheid conducted biological resource surveys and wetland delineation for the parking lot expansion at the Town and County Hotel located adjacent to the San Diego River. The project involved coordination with the resource agencies and City Attorney's office.

As-Needed Consultant Services, Padre Dam Municipal Water District

Mr. Scheid has provided expertise in wetlands and permitting assistance on several task orders under RECON's as-needed environmental services contract with the District. Specific projects include 401, 404 and 1601 permits for Willow Grove Sewer Line project; 401, 404 and 1601 permits for Harbison Canyon Pipeline; and 1601 and 401 permits for Dunbar Lane Water Main Extension.

El Camino Real Road Widening, San Diego, CA

The proposed project was the widening of a two lane segment of El Camino Real Road to four lanes. Mr.

Scheid completed a wetland delineation, prepared the report, and prepared the biological resources report.

Wildcat Canyon Road Enhancement Wetland Delineation, San Diego, CA

The proposed project was the widening of Wildcat Canyon Road to improve traffic conditions along this county road. Mr. Scheid completed a wetland delineation, prepared the report, and assisted with impact analysis for the biological resources report.

Calavera Hills Master Plan Phase II Wetland Delineation and Permits, San Diego, CA

Mr. Scheid prepared applications for a Section 404 permit from the USACE, a 1601/1603 Streambed Alteration Agreement from the CDFG, and a State Water Quality Certification (Section 401) from the Regional Water Quality Control Board.

Black Mountain Ranch/Santa Luz Wetland Delineation and Permits, San Diego, CA

Mr. Scheid prepared a 404 permit application that included a 404(b)(1) guidelines alternatives analysis and a 1603 Streambed Alteration Agreement application package.

Calleguas Creek Biology/Wetlands Update, San Diego, CA

Mr. Scheid provided technical assistance in negotiations with the resource agencies pursuant to the Section 404 permit and 1603 agreements.

Calavera Hills Master Plan and Detention Basins Wetland Delineation and Permits, San Diego, CA

Mr. Scheid prepared permit applications for a Section 404 permit from the USACE, a 1601/1603 Streambed Alteration Agreement from the CDFG, and a State Water Quality Certification (Section 401) from the Regional Water Quality Control Board.

SR-125 South Biology Studies and Wetland Delineation, San Diego, CA

Mr. Scheid mapped vegetation and surveyed for sensitive plant species along the alignment, including directed searches for the Otay tarplant. For the Citizen's Advisory Committee alignment, he delineated wetland boundaries of vernal pools south of Sweetwater Reservoir and at various creek locations along the alignment in accordance with USACE methods.

Peter Dolan
Biologist

Experience Highlights

- ✓ Conducts general plant and wildlife surveys and focused surveys for rare species
- ✓ Skilled in identification of general and rare plants
- ✓ Knowledge of local biological resources

Experience:

9 years

Education:

M.S. Plant Ecology, Georgia Southern University, 2002

B.S., Biology, Salisbury State University, Maryland, 1998

Permits/ Trainings:

Building Geodatabases, ESRI, Redlands, Ca 2007

Native Grass and Oak Identification Workshop (RSABG), 2008

SDNHM Native Plant Identification Workshop (Boraginacea), 2008

Southwestern Willow Flycatcher Workshop, Kern River Research Center, 2009

Experience Summary

Mr. Dolan is a biologist on RECON's Federal Team. He specializes in habitat restoration and his responsibilities include habitat assessment; mitigation and restoration planning; and restoration implementation, maintenance, and monitoring. Mr. Dolan develops conceptual upland, wetland, and species-specific mitigation plans that include grading, irrigation, and planting, as well as enhancement, monitoring, and maintenance activities. He assists in conducting general biological surveys including rare plant, invasive weed mapping, herpetological, avian, mammal, and botanical surveys. Mr. Dolan also assists in conducting wetland delineations according to USACE, CDFG, California Coastal Commission, City of San Diego, and County of San Diego protocols.

SDG&E Sunrise Powerlink Rare Plant Surveys

Mr. Dolan conducted rare plant surveys in support of the San Diego Gas & Electric Sunrise Powerlink project. Mr. Dolan specifically conducted surveys in desert transition habitat to Sonoron desert flatlands within the Inkopah grade east of Ocotillo, CA and in chaparral near Alpine, CA.

City of El Centro Fire Department and Park Development Site, El Centro, CA

Mr. Dolan surveyed for sensitive plants, mapped vegetation communities, and recorded general wildlife and plant species on 6 acres within the City of El Centro, proposed for the development of a new fire station and public park.

Vegetation Surveys for the BLM Kingman District Field Office, Kingman, AZ

Mr. Dolan provided botanical and plant utilization surveys in assistance for management decisions by BLM Kingman District Field Office grazing allotment and natural resource land managers. Mr. Dolan conducted rare plant surveys with the BLM Arizona state botanist within BLM Kingman District Field Office region and independently reorganized and digitally categorized herbarium collections encompassing the Sonoran, Colorado Plateau, and Mojave desert regions for the BLM Kingman District Field Office.

Permits/ Trainings continued:

USFWS Permit #TE-797665 under supervision for Least Bell's Vireo nest monitoring, California gnatcatcher surveys and nest monitoring, San Bernardino kangaroo rat surveys, Pacific pocket mouse surveys, and Quino checkerspot butterfly surveys

USFWS Permit #TE-134338 under supervision to conduct surveys for Quino checkerspot butterfly

Affiliations:

California Native Plant Society, 2009

Society for Ecological Restoration California Chapter, 2007

International Erosion Control Association, 2005

Georgia Coastal Plain Native Plant Society, 2002

Georgia Plant Conservation Alliance, 2002

Mr. Dolan implemented a protocol for both local and interagency collaboration concerning the documentation, monitoring, and disposal of invasive species.

El Portrero Prescribed Burn Fuels Management NEPA EA and Habitat Assessment for SKR, BLM Palm Springs-South Coast Field Office, CA

Mr. Dolan conducted biological surveys in support of the El Potrero fuels modification project to reduce the unwanted effects of wildfires on targeted areas and resources within the BLM Palm Springs-South Coast field Office area. Survey work included vegetation mapping, general plant and wildlife surveys, rare plant survey, and habitat assessments for SKR and burrowing owl.

Gavilan Hills Management NEPA EA and Habitat Assessment for SKR, BLM Palm Springs-South Coast Field Office, CA

Mr. Dolan is providing general biological surveys and habitat assessments in support of the Gavilan Hills Fuels modification project to reduce the unwanted effects of wildfires on targeted areas and resources within the BLM Palm Springs-South Coast Field Office area.

Natural Land Community and Ecological System Identification Surveys for the Nevada portion of the Southwest Regional Gap Analysis Project (SWReGAP)

Mr. Dolan conducted vegetation and land cover classification surveys throughout the state of Nevada. Vegetation surveys ranged throughout the Mojave, Great Basin, and Eastern Sierra Nevada. Backcountry survey coverage included the Alta Toquima, Arc Dome, Jarbidge, Mt. Rose, and Ruby Mountain Wilderness Areas.

Restoration Projects Coordinator, Ft. Irwin, CA

Prior to joining RECON, Mr. Dolan served as Restoration Projects Coordinator at Ft. Irwin for five years. He provided technical support to plan and execute land restoration projects involving revegetation, road stabilization, hydrologic diversions, water bars, sediment basins, critical area stabilization, seeding, monitoring and other associated conservation measurements to improve land conditions. He assessed rehabilitation project requirements ranging from heavy earth moving equipment to basic logistical needs. Mr. Dolan also provided support necessary to maintain compliance with regulatory issues effecting Land Rehabilitation and Maintenance (LRAM) projects such as federal, state and local sedimentation laws, NEPA, OSHA, and EPA.

Jillian S. Bates

Wetlands Specialist/Project Biologist

Experience Highlights

- ✓ Experience conducting wetlands delineations and preparing Permit Applications
- ✓ Knowledge of local biological resources
- ✓ Threatened and endangered species surveys and monitoring

Experience

8 years

Education

M.S., Environmental Management, Columbia Southern University, 2007

B.S., Environmental Science, University of Tampa, 2003

Permits/ Trainings

USFWS Permit #TE-797665 to independently conduct surveys for Vernal Pool Branchiopods

Under supervision to conduct protocol surveys for Quino Checkerspot Butterfly, California Gnatcatcher, Southwestern Willow Flycatcher, and Least Bell's Vireo nest monitoring

Wetland Delineation Training, Federal Wetland/Waters Regulatory Policy, and Arid West Supplement, Wetland Training Institute

Experience Summary

As a biologist of RECON's Agency Team, Ms. Bates conducts habitat assessments; vegetation mapping; wetland delineations; focused surveys for endangered, threatened, and sensitive species; and monitoring in a variety of habitats in southern California.

Ms. Bates prepares biological technical reports; evaluates project impacts on sensitive biological resources in accordance with CEQA; prepares jurisdictional delineation reports; and coordinates permitting with the water resource agencies.

SDG&E Species Surveys, Sunrise Powerlink, San Diego and Imperial Counties, CA

Ms. Bates assisted with coordinating and conducted protocol surveys for the endangered arroyo toad, least Bell's vireo, and southwestern willow flycatcher over several miles of widely scattered drainages in San Diego County at right-of-way crossings for the proposed Sunrise Powerlink transmission project in 2009.

County of San Diego Species Surveys, Old Highway 80 Bridge Scour Project, Pine Valley, CA

Ms. Bates assisted with coordinating and conducting protocol surveys for the arroyo toad, least Bell's vireo and southwestern willow flycatcher along Pine Valley Creek at Old Highway 80 for the proposed geotechnical studies.

SDG&E NCCP On-Call Water Quality Services Contract, San Diego, CA

As project manager, Ms. Bates provides as-needed water permitting services for operation and maintenance (O&M) activities and utility projects in support of the SDG&E NCCP. Services include, but are not limited to: providing project management; conducting field surveys for wetlands delineations and preparing associated technical reports; preparing application packages for the CDFG 1602 Lake and Streambed Alteration Agreement, RWCQB 401 Water Quality Certification, ACOE Section 404, Section 10, Pre-Construction Notification (PCN), and Significant Nexus forms; and providing conceptual mitigation plans.

SDG&E NCCP On-Call Operation & Maintenance Contract, San Diego, CA

Ms. Bates has provided biological support services to SDG&E for operation and maintenance activities (O&M) and utility projects in support of the SDG&E NCCP. She has performed biological surveys, habitat assessments, and construction monitoring. She has prepared Pre-Activity Surveys on operation and maintenance activities such as pole brushing, pole replacement, tree trimming, and access road grading.

Otay Water District Subarea Plan NCCP/HCP, San Diego, CA

As lead biologist, Ms. Bates is assisting in the research and writing of the Otay Water District's Subarea Plan. This plan will meet state and federal requirements including Section 2835 of the Fish and Game Code and Section 10(a) of the Endangered Species Act, and will be compatible and consistent with the Joint Water Agencies Subregional Plan. The NCCP/HCP will adequately identify the types of activities proposed for coverage and an assessment of expected impacts.

County of San Diego, Jurisdictional Delineation and Permits for the Alvarado Court Sewer Pipe Crossing Accelerated Project, San Diego, CA

As project biologist, Ms. Bates completed the biological resource report for the proposed County of San Diego Sewer Pipe Crossing Project. Ms. Bates also prepared the application packages for the CDFG 1602, RWQCB 401, and ACOE Section 404 permits.

County of San Diego, Lawson Valley Road Bridge Replacement Wetland Delineation, San Diego, CA

Ms. Bates conducted the biological resource survey and wetlands delineation, and prepared the technical reports to identify and map the location of biological and jurisdictional resources for the proposed County of San Diego bridge replacement project.

Sunshine Beradini Fields, Jurisdictional Delineation, San Diego, CA

Ms. Bates conducted wetlands delineation and prepared the technical report to identify and map the location of jurisdictional waters to provide necessary background information for analysis by USACE and CDFG.

Karyl Palmer
Environmental Analyst

Highlights

- ✓ NEPA experience
- ✓ Conducts acoustical and air quality studies
- ✓ Knowledge of applicable regulations

Experience:

2 year

Education:

Master of Science in Environmental Engineering, National University, La Jolla, CA 2006

B. A. Marine Science, University of San Diego, CA, 2002

Permits/Certifications:

San Diego REBRAC - Cuyamaca College, OSHA 40 Hour Hazwoper Certification and OSHA 8 Hour Refresher Training, 2007 & 2008

Affiliations:

San Diego Coastkeeper, Water Monitoring Training, 2008

Association of Environmental Professionals, San Diego Chapter, Student Member, 2004-2005

Association of Environmental Professionals Fall 2004 CEQA Basic Workshop

Experience Summary

As an environmental analyst, Ms. Palmer prepares CEQA and NEPA compliance documents for large- and small-scale projects throughout southern California. She is responsible for document preparation, research, issue analysis, report writing, and client coordination. She prepares accurate and thorough environmental documents within the limits of the project budget and schedule.

Representative Projects:

- San Luis Rey River Stream Bioassessment Surveys, San Diego County, CA
- San Luis Rey River Population Monitoring and Vegetation Use Data Collection, San Diego County, CA
- San Luis Rey River Flood Conveyance Mowing Biological Monitoring, San Diego County, CA
- Adaptive Habitat Management Plan for the San Luis Rey River, San Diego County, CA
- San Mateo Creek Restoration Project at the Marine Corps Base Camp Pendleton, San Diego County, CA
- Talega Creek Restoration Project at the Marine Corps Base Camp Pendleton, San Diego County, CA
- Draft Environmental Initial Study Raw Water Pump Station Upgrades and Slope Stabilization Project, San Diego County, CA
- Pre-activity Survey Reports in Support of SDG&E's Natural Communities Conservation Plan for Various Operations and Maintenance Activities
- Noise Analysis for the Tavern Road Drainage Improvement Project, San Diego, CA
- Integrated Natural Resources Management Plan for Naval Air Facility El Centro, El Centro, CA
- Air Quality Analysis for the Final Negative Declaration for the Whitegates I Reservoir Demolition Project, Riverside, CA
- Noise Analysis for the Final Negative Declaration for the Whitegates I Reservoir Demolition Project, Riverside, CA

- Air Quality Analysis For Final Mitigated Negative Declaration for the City of Riverside, Expanded Gage Exchange Project, Riverside, CA
- Noise Analysis For Final Mitigated Negative Declaration for the City of Riverside, Expanded Gage Exchange Project, Riverside, CA
- Air Quality Analysis for the Alvarado Apartments Project, San Diego, CA
- Environmental Assessment for the Dulzura Fuel Break; Bureau of Land Management, San Diego County, CA
- BLM South Coast Resource Management Plan/EIS, Southern California
- Draft EIR for Tiered Winery Zoning Ordinance Amendment , San Diego, CA

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Imperial Solar Energy Center West

Appendix I-3

Burrowing Owl Nesting Season Surveys

Prepared by Recon Environmental, Inc.

July 29, 2010

1927 Fifth Avenue
San Diego, CA 92101-2357
P 619.308.9333 F 619.308.9334
www.recon-us.com

525 W. Wetmore Rd., Suite 111
Tucson, AZ 85705
P 520.325.9977 F 520.293.3051

1412 W. 6th 1/2 Street
Austin, TX 78703-5150
P 512.913.1200 F 512.474.1184

RECON

A Company of Specialists

July 29, 2010

Mr. Steve Johnson
CSOLAR Development, LLC
1044 N. 115th Street, Suite 400
Omaha, NE 68154

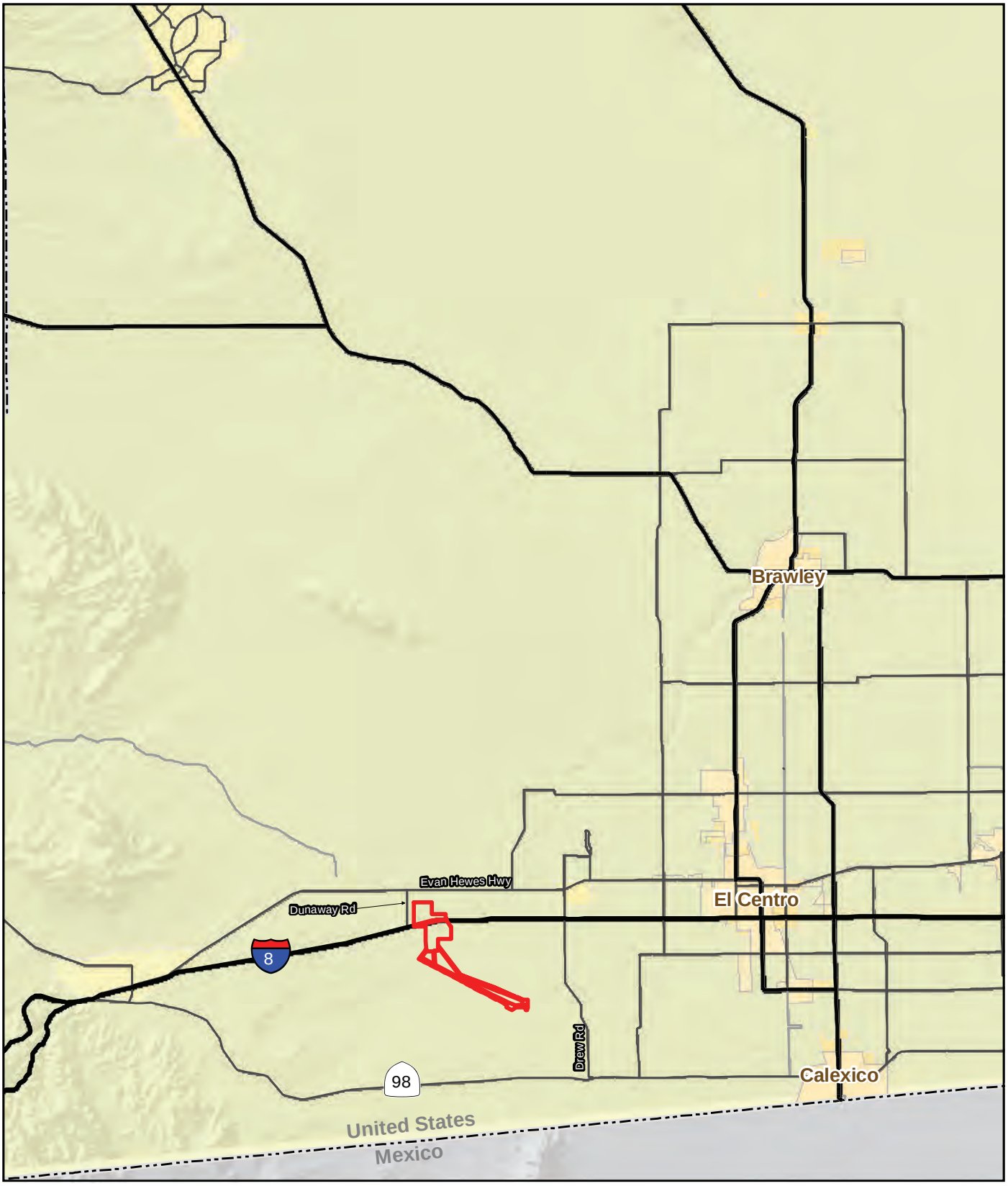
Reference: Post-Survey Results for Burrowing Owl Nesting Season Surveys for the Imperial Solar Energy Center West Project (RECON Number 5726B)

Dear Mr. Johnson:

This letter summarizes the results of the 2010 nesting season surveys for burrowing owl (*Athene cunicularia*) conducted within the Imperial Solar Energy Center (ISEC) West Project survey area. The proposed ISEC West Project is located approximately 8 miles west of El Centro in Imperial County, California (Figure 1). The proposed project includes a 1,128-acre solar field (R-1) that abuts Interstate 8 to the north and south; a proposed 230-kilovolt (kV) transmission line route (IVW-1) running from the southwest corner of the solar field to the Imperial Valley Substation adjacent to an existing 230-kV transmission line; an alternate 230-kV transmission line route (Alternative A; IVW-2 and IVW-2A) running from the southeast corner of the solar field to the Imperial Valley Substation; and a second alternate 230-kV transmission line route (Alternative B; IVW-2 and IVW-2B) that shares a portion of the Alternative A route, but bypasses a parcel of privately owned land (Figures 2 and 3).

The project area is found in: Township 16 South, Range 11 East, Sections 19, 24, 25, 30, and 31 U.S. Geological Survey (USGS 1979); Township 16 South, Range 12 East, Sections 18, 19, 30, 31, 32, 33, and 34 (USGS 1976a); Township 16.5 South, Range 12 E, Sections 3 and 4 (USGS 1976b) of the USGS Plaster City, Mount Signal, and Yuha Basin quadrangles (see Figures 2 and 3). The proposed project is found within fallow agricultural fields and undisturbed desert immediately west of the active agricultural complex that surrounds El Centro, California.

RECON conducted burrowing owl protocol nesting season surveys within suitable habitat in accordance with the 1993 California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993). Phase I, Phase II, and Phase III were conducted to determine the presence or absence of the species within and adjacent to the proposed project area.



Project Area

FIGURE 1

Regional Location

RECON

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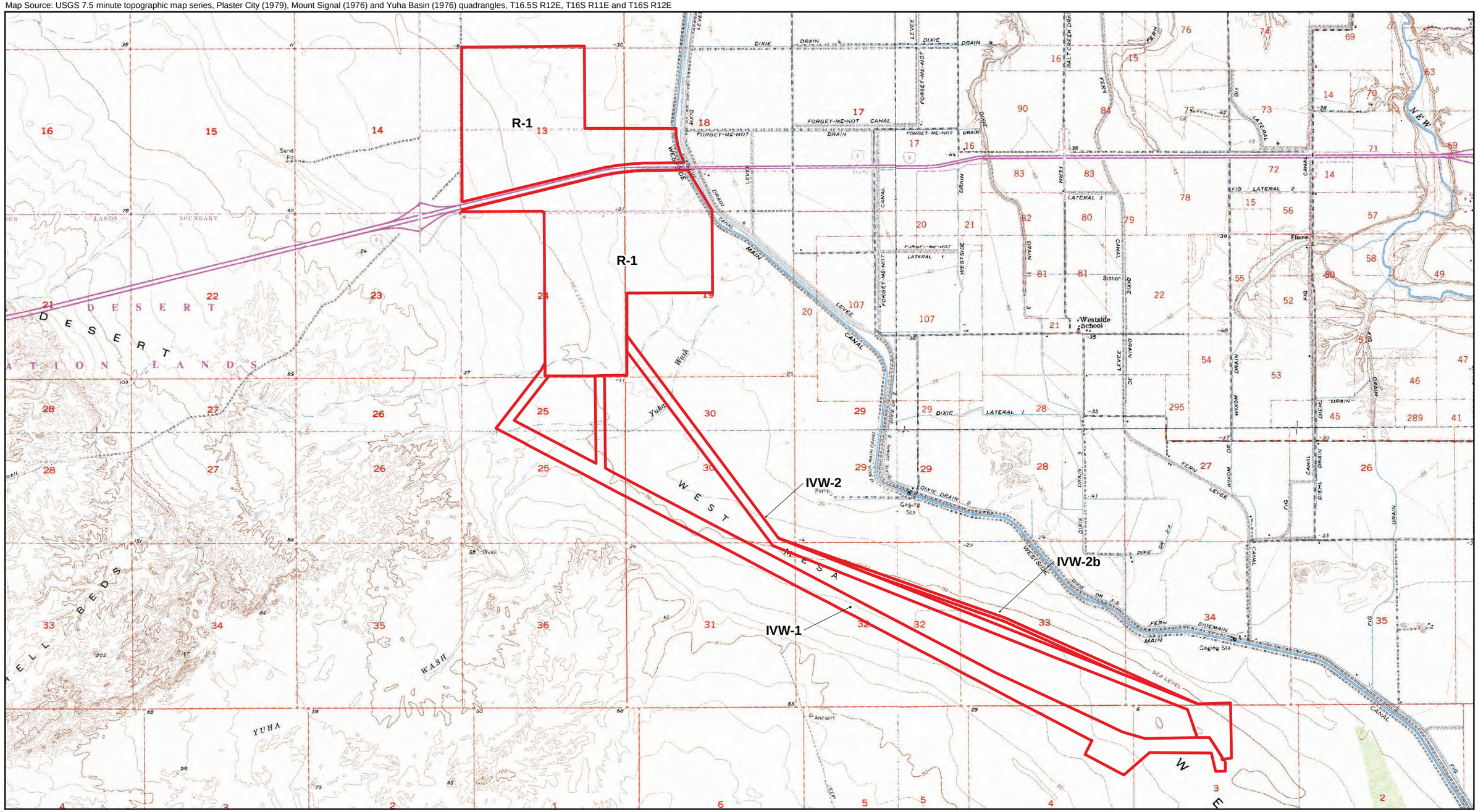
Map Source: USGS 7.5 minute topographic map series, Plaster City (1979), Mount Signal (1976) and Yuha Basin (1976) quadrangles, T16.5S R12E, T16S R11E and T16S R12E



RECON

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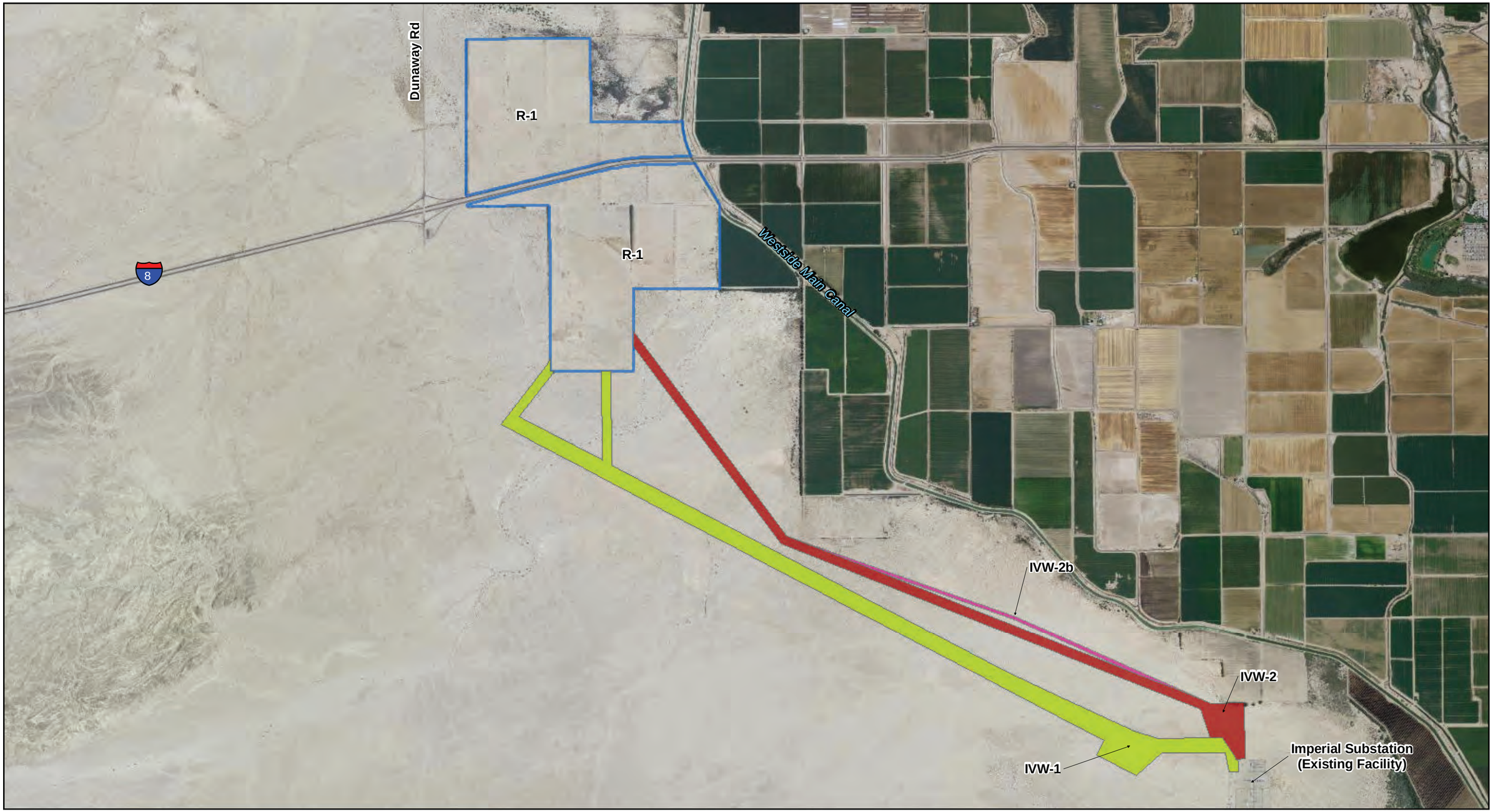
FIGURE 2

Project Location on USGS Map

Image Source: CDFG (flown Summer 2009)



Project Components

- IV West Project Area (R-1)
- Preferred Transmission Line (IVW-1)
- Alternate Transmission Line (IVW-2)
- Private Land Avoidance Transmission Line (IVW-2b)

RECON

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FIGURE 3

Overview of the Imperial Solar Energy Center West Project

Two active burrowing owl burrows, and their associated burrowing owls, were detected during the survey in soil berms adjacent to the fallow agricultural fields within the proposed solar field.

Methods

RECON biologists Cheri Bouchér and Carianne Funicelli Campbell conducted Phase I and II surveys for burrowing owl in accordance with the guidelines developed by the California Burrowing Owl Consortium (CBOC 1993). The Phase I habitat assessment and Phase II burrow surveys for burrowing owl were conducted in conjunction with general biological surveys and rare plant surveys for the project in March, April, and May 2010.

The habitat assessment and burrow surveys identified 1,603 acres of suitable habitat for burrowing owl within and adjacent to the project components. These survey areas are shown on Figures 4a and 4b and include:

- IVW-1 Proposed Transmission Line—500-foot survey buffer from the center line of the 5.8-mile corridor (700 acres)
- IVW-2 Alternate Transmission Line—500-foot survey buffer from the center line of the 4.6-mile corridor (476 acres)
- R-1 ISEC West Solar Field and 500-foot survey buffer—berms and irrigation culverts only within fallow and active agricultural fields (386 acres)
- INV Alternate Transmission Line—500-foot survey buffer from the center line of the 1-mile corridor (41 acres)

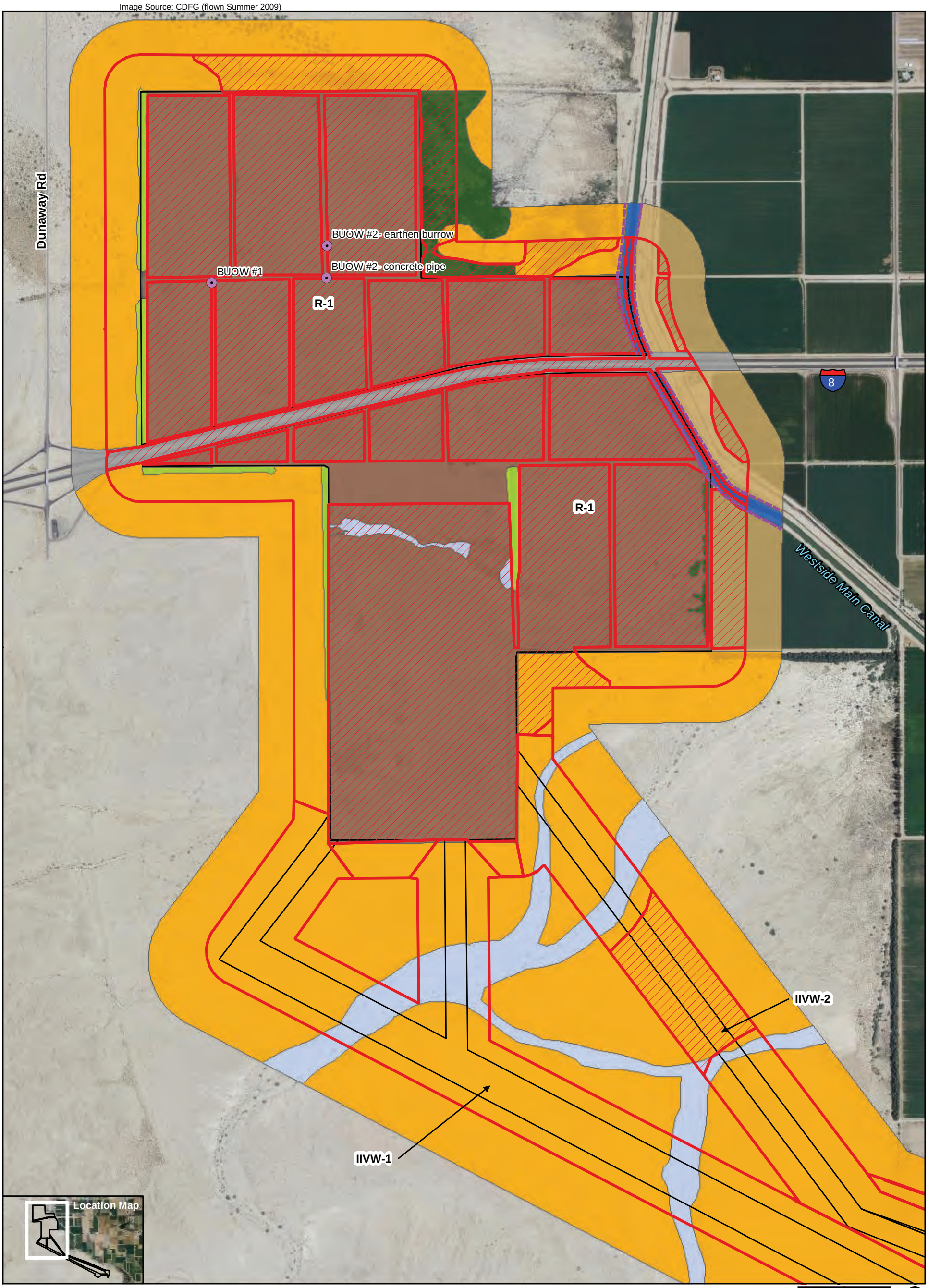
Phase III, a focused nesting season burrowing owl survey, was conducted by RECON from June 1 through July 15, 2010. The focused nesting season survey consisted of four 100-percent visual coverage surveys within the suitable burrowing owl habitat identified during the Phase I and II surveys. These pedestrian surveys were conducted by walking transects within the survey area that allow for 100-percent visual coverage of the ground surface. The distance between transect center lines did not exceed 30 meters and was reduced if necessary to account for differences in terrain, vegetation density, and ground surface visibility. Surveyors walked at a speed not to exceed 15 acres per hour per surveyor. All suitable habitat within survey area was surveyed from 2 hours before sunset to 1 hour after or from 1 hour before sunrise to 2 hours after (CBOC 1993). All burrowing owl burrows, sign, and individual locations were recorded using a Trimble GeoXH2 global positioning system (GPS) unit. All wildlife species observed during the surveys were noted.

Each project component was surveyed every 1.5 to 2 weeks, for a total of four site visits. Survey dates, times, and weather conditions are provided in Attachment A.

Two additional sections totaling 132 acres were added to the survey area in July 2010 and include:

- IVW-1b Proposed Transmission Line—500-foot survey buffer from the shifted center line of the 5.8-mile corridor (30 acres).
- IVW-2b Alternate Transmission Line—500-foot survey buffer from the center line of the 3-mile private land by-pass corridor (102 acres).

Image Source: CDFG (flown Summer 2009)



Project Area
Burrowing Owl Survey Area
Excluded Area
Burrowing Owl (*Athene cunicularia hypugea*) Pair and Active Burrow

Vegetation Communities
Active Agriculture
Creosote Bush-White Burr Sage Scrub
Desert Wash
Developed
Fallow Agricultural Fields
Mesquite Thicket
Open Water/Irrigation Canal
Tamarisk Thicket
Arrow-weed Thicket

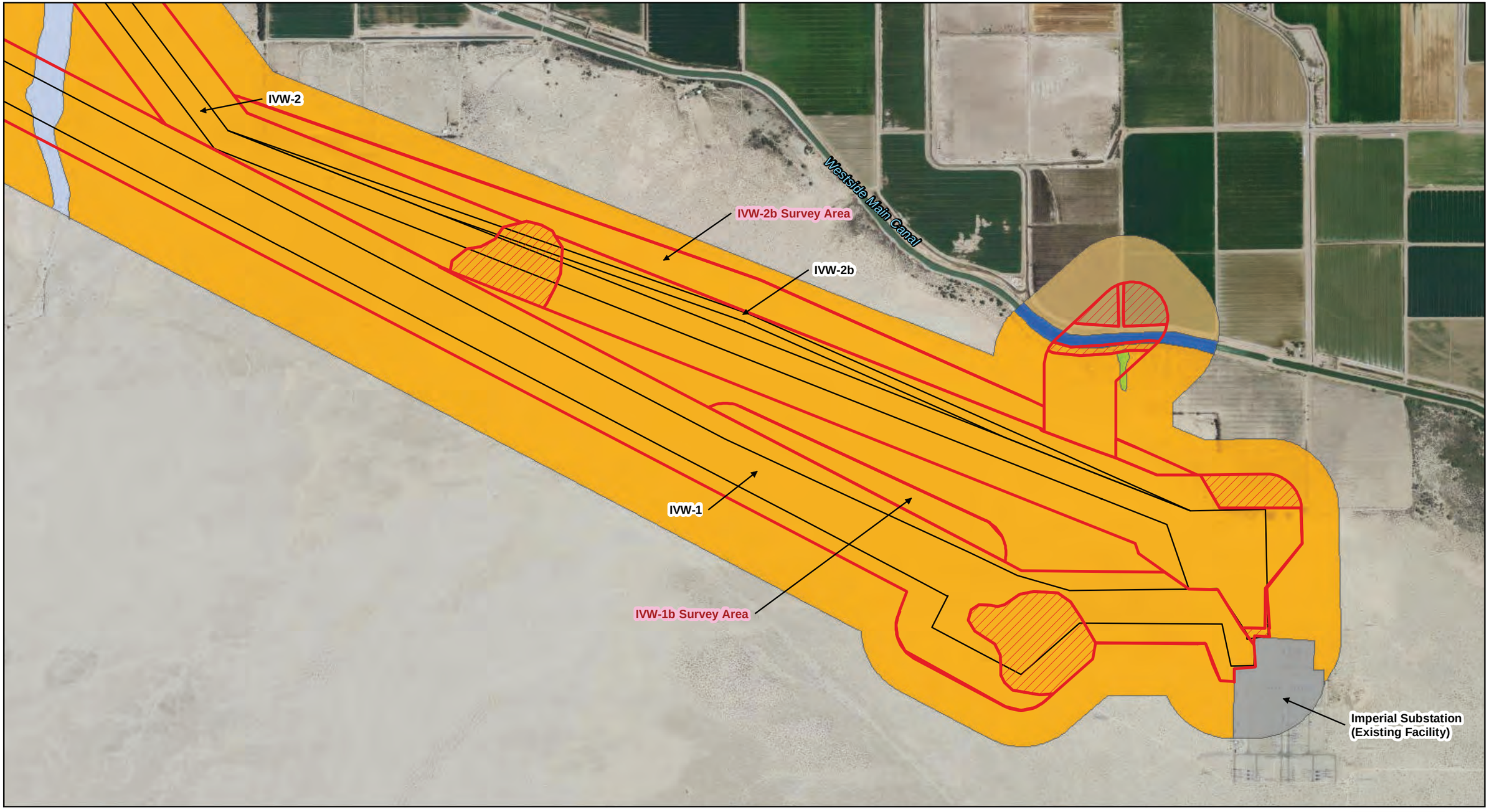
0 Feet 1,300

FIGURE 4a
Habitat Assessment and Survey Results for Burrowing Owl Surveys on the Imperial Solar Energy Center West Project

RECON

M:\JOBS3\5726\common_gis\buow\West_fig4a.mxd 7/26/2010

Image Source: CDFG (flown Summer 2009)



Project Area

Burrowing Owl Survey Area

Excluded Area

Vegetation Communities

Active Agriculture

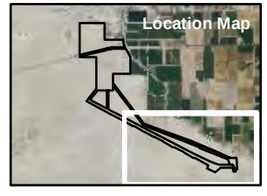
Creosote Bush-White Burr Sage Scrub

Desert Wash

Developed

Open Water/Irrigation Canal

Tamarisk Thicket



0 Feet 1,300

RECON

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FIGURE 4b
Habitat Assessment and Survey Results for Burrowing Owl Surveys on the Imperial Solar Energy Center West Project

These additional sections were surveyed in accordance with the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) as described above, except that the four site visits were conducted between July 6 and July 15, 2010. As these sections were immediately adjacent to the greater survey area, the habitat and survey conditions did not differ from the adjacent greater survey area; therefore, it is assumed that the compressed survey period of these areas is representative of the 2010 burrowing owl nesting season.

Phase I and II: Habitat Assessment and Burrow Surveys

A burrowing owl habitat assessment was conducted on March 24 and 30, and April 7, 2010 within and adjacent to the proposed ISEC West solar field and transmission corridors. This habitat assessment was conducted in conjunction with vegetation mapping and general biological surveys for the proposed project.

As seen in Attachment A, burrow surveys were conducted in conjunction with other spring surveys in April and May 2010 due to the large amount of habitat to be evaluated. In addition, the first of the four site visits for focused nesting season surveys provided opportunities to refine the habitat assessment and burrow observations.

Existing Conditions

The proposed project is located in a Colorado Desert lowland between agricultural fields to the east and Mount Signal to the west. Alluvial fans and washes run through the site at various locations, flowing northeast from Mount Signal to enter the Westside Main Canal that skirts the edge of the active agricultural fields. The proposed ISEC West solar field is located within land previously used for agricultural fields. The majority of the fields have been fallow approximately 10 years, and the farm-field topography—including furrows, irrigation ditches, culverts, and berms separating the fields—are still prominent. The southwestern-most parcel within the proposed ISEC West solar field appears to have been fallow longer, as the agricultural furrows are less evident and many native plant species have re-established. Along the proposed transmission corridors that run southeast from the solar field, the large Yuha Wash and other minor washes bisect the transmission corridors at numerous locations. The upland topography between the washes is relatively flat, with sparse vegetation and varying degrees of desert pavement on the surface.

As seen in Figures 4a and 4b, the survey area supports several vegetation communities, including creosote bush–white burr sage scrub, desert wash, mesquite thicket, tamarisk thicket, arrow weed thicket, open water, fallow agricultural fields, and active agricultural fields.

Creosote bush–white burr sage scrub is the dominant vegetation community within the transmission line corridors in the survey area. This native vegetation alliance is dominated by creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*) with relatively sparse vegetative cover and very flat topography. A layer of desert pavement is present between the shrubs in varying densities throughout the creosote bush–white burr sage vegetation. A number of annual species were observed during the spring surveys that offered a sparse herbaceous layer intermixed with the desert pavement. These species included desert sunflower (*Geraea canescens*), desert sand verbena (*Abronia villosa* var. *villosa*), Peirson's browneyes (*Camissonia claviformis* ssp. *peirsonii*), pebble pincushion (*Chaenactis carophoclinea* var*. carophoclinea*), pincushion flower (*C. stevioides*), desert cambess (*Oligomeris linifolia*), narrow leaved forget-me-not (*Crypthantha angustifolia*), and Mediterranean grass (*Schismus barbata*).

A number of desert washes, including the large Yuha Wash, flow northeast through the transmission corridors from Mount Signal into the Westside Main Canal. These washes are braided with the main flow channels primarily lacking in vegetation, while the sandbars and banks

support smoke tree woodland and/or big galletta shrub steppe vegetation alliances. The areas dominated by smoke tree woodland support a number species, including rayless encelia (*Encelia frutescens*), sweetbush (*Bebbia juncea*), individual honey mesquite trees (*Prosopis glandulosa*) and salt cedar trees (*Tamarix aphylla*), scattered saltbush shrubs, a moderate to sparse cover of big galletta grass (*Pleuraphis rigida*), and sparse creosote bush and white burr sage. A few locations that have larger dense patches of galletta grass adjacent to or in the middle of the smoke tree woodland are classified as big galletta shrub steppe.

A small mesquite thicket, dominated by honey mesquite, is present along the eastern edge of the proposed ISEC West solar plant, adjacent to an irrigation ditch. A dense understory of quailbush (*Atriplex lentiformis*) is present along the edges of the thicket and in between the honey mesquite trees. A larger mesquite thicket is present outside of the survey area along the northeast border of the IV West solar field. In this area, dense patches of honey mesquite are interspersed with tamarisk (*Tamarix* spp.) and creosote bush.

Rows of tamarisk trees are present along the edges of the fallow agricultural fields. These trees form dense tamarisk thickets that preclude other plant species from establishing. Various discarded clothing and food articles indicate continual human disturbance.

Arrow weed (*Pluchea sericea*) has established along the edges of the Westside Main Canal in many locations, forming 5-foot-deep arrow weed thickets. These thickets largely exclude other plant species, but weedy invasive species such as sow thistle (*Sonchus* sp.), Sahara mustard (*Brassica tournifortii*), and London rocket (*Sisymbrium irio*) grow along the banks in between the arrow weed thickets.

The Westside Main Canal borders the fallow agricultural fields on the eastern edge of the ISEC-West solar field. This canal is unvegetated but, holding water, and is classified as open water.

Fallow agricultural fields encompass the majority of the proposed ISEC-West solar field. Many of these fields have been fallow approximately 10 years, while the southwestern parcel appears to have been fallow much longer. While a number of weedy species have established since agricultural practices ceased, mustard species such as Sahara mustard and London rocket provide the dominant vegetative cover in most areas and are classified in the upland mustard vegetation alliance. Nettle-leaf goosefoot (*Chenopodioum murale*) and Mediterranean grass are also co-dominant species that provide significant vegetative cover, although the density and composition varies throughout the survey area. Other common species within the fallow agricultural fields include narrow-leaved forget-me-not, desert cambess, and Peirson's browneyes. In addition, native perennials such as four-wing saltbush and desert holly are beginning to re-establish along the edges of the fields, adjacent to the canal and Interstate 8.

Habitat Assessment

The creosote bush–white burr sage scrub provides suitable habitat for burrowing owl in most portions of the survey area. The canopy cover of shrubs is less than 30 percent, allowing for adequate foraging visibility, and in most areas, kangaroo rat (*Dipodomys* spp.), round-tailed ground squirrel (*Spermophilus tereticaudus*), kit fox (*Vulpes macrotis*), desert cottontail rabbit (*Sylvilagus audubonii*), and other small and medium-sized mammal burrows provide burrowing opportunities (Photograph 1).

PHOTOGRAPH 1
Kangaroo Rat Burrow Complex Provides
Suitable Habitat for Burrowing Owl In IVW-1

PHOTOGRAPH 2
Desert Pavement Lacking Burrows within the
Creosote Bush-White Burr Sage Scrub In IVW-2

Creosote bush–white burr sage scrub is excluded from the survey area in specific locations where desert pavement precludes burrowing by small mammals, or where very flat, sparsely vegetated areas lack suitable burrows (Photograph 2).

The culvert pipes and soil berms along the edges of the fallow and active agricultural fields provide abundant perching, burrowing, and foraging opportunities for burrowing owl and were included in the survey area (Photograph 3).

The interior portions of the fallow and active agricultural fields were excluded from the survey. The soil within the fallow fields is still very flat and compact from previous agricultural practices, and no burrows large enough for burrowing owl were observed (Photograph 4). In addition, the active farm fields receive continual disturbance that inhibits long-term burrowing.

The mesquite thickets, tamarisk thickets, and arrow weed thicket were excluded from the burrowing owl survey area, as the vegetative cover within these communities is too dense to provide foraging and burrowing opportunities.

Phase III: Focused Burrowing Owl Nesting Season Surveys

Two active burrowing owl burrows were observed during the focused nesting season surveys within the fallow agricultural fields north of Interstate 8. As seen on Figure 4a, the westernmost active burrow hosted a pair of burrowing owls (BUOW #1), but no eggs or juveniles were detected in or around the burrow during the surveys. As seen in Photograph 5, the burrow is an earthen burrow built into the dirt road/berm that separates two of the fallow fields.

The second burrowing owl pair (BUOW #2), shown on Figure 4a, had two juvenile burrowing owls, for a total of four owls in the territory. This family appeared to be using two distinct burrows approximately 150 feet apart, one of which is an earthen burrow within a dirt road/berm separating the fallow agricultural fields (Photograph 6), and the second is a horizontal concrete pipe inside a larger irrigation pipe system that is remnant from the agricultural practices on-site (Photograph 7). The owls were observed foraging and perching near both burrows frequently.

While suitable habitat is present within the transmission line corridors, no burrowing owl, burrowing owl burrow, or burrow owl sign was observed within the corridors during the surveys.

Attachment B lists the wildlife species observed during the 2010 spring and summer surveys, including the focused nesting season burrowing owl surveys.

Recommended Future Surveys

In accordance with the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993), no winter burrowing owl survey is required within the survey area, as burrowing owl were observed during the nesting season surveys.

A pre-construction burrowing owl survey of the proposed ISEC West solar field and the transmission line may be required prior to any grading activities for the proposed project to identify current burrowing owl locations and prevent impact to this species.

PHOTOGRAPH 3
Inactive Mammal Burrow Provides Suitable Burrowing Owl Habitat
within a Berm at the South End of Fallow Agricultural Fields

PHOTOGRAPH 4
Fallow Agricultural Fields with Compacted Soils
Lacked Suitable Burrows for Burrowing Owl

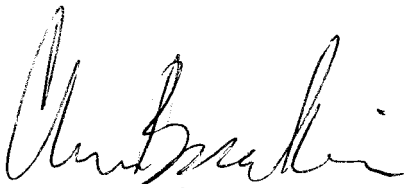
PHOTOGRAPH 5
Active Burrow for Burrowing Owl #1 within a
Soil Berm between the Fallow Agricultural Fields

PHOTOGRAPH 6
Active Burrow for Burrowing Owl #2 within a
Soil Berm between the Fallow Agricultural Fields

PHOTOGRAPH 7
Active Burrow for Burrowing Owl #2 within
an Inactive Concrete Pipe Irrigation System

If you have any questions concerning the contents of this letter, please contact me.

Sincerely,



Cheri A. Bouchér
Senior Project Biologist

CAB:eab

cc: Magdalena Rodriguez, California Department of Fish and Game
Jennifer Whyte, Bureau of Land Management
Tim Gnibus, BRG Consulting
Patricia Valenzuela, County of Imperial

References Cited

California Burrowing Owl Consortium (CBOC), the
1993 *Burrowing Owl Survey Protocol and Mitigation Guidelines*. The California Burrowing Owl Consortium. April.

United States Geological Survey (USGS)
1976a Mount Signal quadrangle 7.5-minute topographic map.

1976b Yuha Basin quadrangle 7.5-minute topographic map.

1979 Plaster City quadrangle 7.5-minute topographic map.

ATTACHMENT A

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
03/24/2010	ALL	N/A	Vegetation mapping, general biological survey (BUOW Phase I and II)	Cheri Bouchér Carianne Campbell	8:00 A.M.; 50ºF; winds 7–10 mph; 0% cloud cover	4:15 P.M.; 80ºF; winds 0–4 mph; 0% cloud cover	N/A
03/29/2010	R-1	71	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Karyl Palmer	1:30 P.M.; 85ºF; winds 0–1 mph; sunny with 60% high haze	5:00 P.M.; 87ºF; winds 0–1 mph; sunny with 60% high haze	6.8
03/30/2010	R-1	258	Rare Plant Survey #1 (BUOW Phase II)	Cheri Bouchér Carianne Campbell Karyl Palmer	7:00 A.M.; 72ºF; winds 0–1 mph; 5% cloud cover	1:00 P.M.; 82ºF; winds 3–5 mph; 10% cloud cover	14.3
03/30/2010	ALL	N/A	Vegetation mapping, general biological survey (BUOW Phase I and II)	Cheri Bouchér Carianne Campbell Karyl Palmer	2:00 P.M.; 80ºF; winds 7–13 mph; 10% cloud cover	5:00 P.M.; 77ºF; winds 5–10 mph; 5% cloud cover	N/A
03/31/2010	R-1	320	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	9:30 A.M.; 67ºF; winds 20–30 mph; 30% cloud cover	3:30 P.M.; 75ºF; winds 30 mph; 50% cloud cover	13.3
04/01/2010	R-1	320	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	12:45 P.M.; 68ºF; winds 2–4 mph; 20% cloud cover	5:45 P.M.; 73ºF; winds 0–2 mph; 10% cloud cover	16
04/02/2010	R-1	150	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Jillian Bates Mike Nieto	8:00 A.M.; 56ºF; winds 2–3 mph; 15% cloud cover	10:30 A.M.; 65ºF; winds 0–1 mph; 5% cloud cover	15

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
04/05/2010	IVW-1	170	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	12:00 P.M.; 70ºF; winds 20–40 mph; 50 % cloud cover	4:00 P.M.; 75ºF; winds 20–40 mph; 30 % cloud cover	10.6
04/06/2010	IVW-1	184	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	9:00 A.M.; 65ºF; winds 2–4 mph; 0% cloud cover	1:00 P.M.; 77ºF; winds 4–7 mph; 0% cloud cover	11.5
04/07/2010	IVW-2	82	Rare Plant Survey #1	Carianne Campbell Gerry Scheid Peter Dolan	8:30 A.M.; 68ºF; winds 2–5 mph; 0% cloud cover	11:00 A.M.; 74ºF; winds 5–8 mph; 0% cloud cover	10.9
04/07/2010	IVN	26	Rare Plant Survey #1	Cheri Bouchér	9:00 A.M.; 70ºF; winds 5–8 mph; 0% cloud cover	11:00 A.M.; 74ºF; winds 5–8 mph; 0% cloud cover	13.0
04/07/2010	IVW-2	46	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell Gerry Scheid Peter Dolan	12:00 P.M.; 75ºF; winds 5–8 mph; 0% cloud cover	2:00 P.M.; 78ºF; winds 3–7 mph; 0% cloud cover	5.8
04/07/2010	ALL	N/A	Vegetation mapping, general biological survey (BUOW Phase I and II)	Cheri Bouchér Carianne Campbell	2:00 P.M.; 78ºF; winds 3–7 mph; 0% cloud cover	4:00 P.M.; 78ºF; winds 5–7 mph; 2% cloud cover	N/A
04/14/2010	IVW-2	65	Rare Plant Survey #1	Cheri Bouchér Carianne Campbell	9:00 A.M.; 68ºF; winds 1–2 mph; 0% cloud cover	1:00 P.M.; 75ºF; winds 1–2 mph; 0% cloud cover	8.1
5/10/2010	R-1	N/A	General biological survey (BUOW Phase I and II)	Cheri Bouchér Carianne Campbell	7:00 A.M.; 65ºF; winds 5–7 mph; 3% cloud cover	9:00 A.M.; 74ºF; winds 5–7 mph; 0% cloud cover	-
05/10/2010	R-1 IVW-1, IVW-2	60	Rare Plant Survey #2	Cheri Bouchér Carianne Campbell	9:00 A.M.; 74ºF; winds 5–7 mph; 0% cloud cover	4:00 P.M.; 82ºF; winds 5–9 mph; 0% cloud cover	4.28

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/1/2010	R-1	247	BUOW Survey #1	Cheri Bouchér Rob Hastings Colby Henley Rob Klotz Jake Mohlmann Daniela Fromer	5:45 P.M.; 98ºF; winds 15–25 mph; 10% cloud cover	8:45 P.M.; 86ºF; winds 15–30 mph; 5% cloud cover	<15
6/2/2010	R-1	236	BUOW Survey #1	Cheri Bouchér Rob Hastings Colby Henley Rob Klotz Jake Mohlmann Daniela Fromer	5:00 A.M.; 70ºF; winds 0 mph; 1% cloud cover	8:00 A.M.; 79ºF; winds 0 mph; 5% cloud cover	<15
6/2/2010	IVW-1	360	BUOW Survey #1	Cheri Bouchér Daniela Fromer Rob Hastings Colby Henley Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 96ºF; winds 0 mph; 50% cloud cover	8:45 P.M.; 85ºF; winds 0 mph; 30% cloud cover	<15
6/3/2010	IVW-2	225	BUOW Survey #1	Daniela Fromer Rob Hastings Colby Henley Rob Klotz Jake Mohlmann	5:00 A.M.; 65ºF; winds 0 mph; 0% cloud cover	8:00 A.M.; 80ºF; winds 0 mph; 0% cloud cover	<15
6/3/2010	IVW-2/IVN	200	BUOW Survey #1	Cheri Bouchér Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 100ºF; winds 0–1 mph; 10% cloud cover	8:30 P.M.; 90ºF; winds 0–1 mph; 5% cloud cover	<15
6/4/2010	IVW-1	225	BUOW Survey #1	Cheri Bouchér Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 71ºF; winds 0 mph; 5% cloud cover	8:00 A.M.; 78ºF; winds 0 mph; 5% cloud cover	<15

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/7/2010	IVW-1, IVW-2	270	BUOW Survey #1	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:30 P.M.; 107ºF; winds 12 mph; 2% cloud cover	8:30 P.M.; 98ºF; winds 13 mph; 2% cloud cover	<15
6/9/2010	R-1	247	BUOW Survey #2	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	6:00 P.M.; 100ºF; winds 13 mph; 0% cloud cover	8:45 P.M.; 88ºF; winds 7 mph; 1% cloud cover	<15
6/10/2010	R-1	236	BUOW Survey #2	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 83ºF; winds 15 mph; 30% cloud cover	8:00 A.M.; 85ºF; winds 21 mph; 5% cloud cover	<15
6/11/2010	IVW-2	270	BUOW Survey #2	Cheri Bouchér Rob Hastings Rob Klotz Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 75ºF; winds 15 mph; 80% cloud cover	8:00 A.M.; 77ºF; winds 17 mph; 30% cloud cover	<15
6/14/2010	IVW-1	315	BUOW Survey #2	Cheri Bouchér Jillian Bates Rob Hastings Wendy Loeffler Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 102ºF; winds 4 mph; 1% cloud cover	8:45 P.M.; 90ºF; winds 0–4 mph; 0% cloud cover	<15
6/15/2010	IVW-2	225	BUOW Survey #2	Cheri Bouchér Jillian Bates Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 74ºF; winds 0 mph; 0% cloud cover	8:00 A.M.; 84ºF; winds 0 mph; 0% cloud cover	<15

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/15/2010	IVW-1	270	BUOW Survey #2	Jillian Bates Rob Hastings Wendy Loeffler Jake Mohlmann Glenna Westbrook Randy Westbrook	5:45 P.M.; 102ºF; winds 8–18 mph; 0% cloud cover	8:45 P.M.; 92ºF; winds 1–4 mph; 0% cloud cover	<15
6/16/2010	IVW-1	315	BUOW Survey #2	Cheri Bouchér Jillian Bates Wendy Loeffler Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 73ºF; winds 0–2 mph; 0% cloud cover	8:00 A.M.; 86ºF; winds 1–5 mph; 0% cloud cover	<15
6/18/2010	R-1	225	BUOW Survey #3	Cheri Bouchér Rob Hastings Jake Mohlmann Glenna Westbrook Randy Westbrook	5:00 A.M.; 80ºF; winds 0–5 mph; 0% cloud cover	8:00 A.M.; 83ºF; winds 2.5 mph; 0% cloud cover	<15
6/21/2010	R-1	225	BUOW Survey #3	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Rob Hastings Jake Mohlmann Glenna Westbrook	5:45 P.M.; 95ºF; winds 10-15 mph; 0% cloud cover	8:45 P.M.; 87ºF; winds 9 mph; 0% cloud cover	<15
6/22/2010	IVW-1	270	BUOW Survey #3	Alex Fromer Peter Dolan Gavin Bieber Rob Hastings Jake Mohlmann Glenna Westbrook	5:00 A.M.; 75ºF; winds 6-9 mph; 0% cloud cover	8:00 A.M.; 86ºF; winds 5-6 mph; 0% cloud cover	<15

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
6/24/2010	IVW-1/ IVW-2	315	BUOW Survey #3	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Rob Hastings Jake Mohlmann Glenna Westbrook	5:45 P.M.; 106ºF; winds 0-2 mph; 0% cloud cover	8:45 P.M.; 95ºF; winds 4-8 mph; 0% cloud cover	<15
6/25/2010	IVW-1/ IVW-2	315	BUOW Survey #3	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Rob Hastings Jake Mohlmann Glenna Westbrook	5:00 A.M.; 77ºF; winds 0-2 mph; 2% cloud cover	8:00 A.M.; 83ºF; winds 1-3 mph; 0% cloud cover	<15
6/28/2010	IVW-2	225	BUOW Survey #3	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Glenna Westbrook	5:45 P.M.; 104ºF; winds 0-4 mph; 0% cloud cover	8:45 P.M.; 95ºF; winds 0-4 mph; 0% cloud cover	<15
6/29/2010	R-1	180	BUOW Survey #4	Alex Fromer Peter Dolan Gavin Bieber Glenna Westbrook	5:00 A.M.; 70ºF; winds 0-1 mph; 0% cloud cover	8:00 A.M.; 79ºF; winds 0-1 mph; 0% cloud cover	<15
6/29/2010	R-1	180	BUOW Survey #4	Alex Fromer Peter Dolan Gavin Bieber Glenna Westbrook	5:45 P.M.; 109ºF; winds 0-1 mph; 0% cloud cover	8:45 P.M.; 96ºF; winds 0-3 mph; 0% cloud cover	<15
6/29/2010	R-1/ IVW-1	225	BUOW Survey #4	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Glenna Westbrook	5:00 A.M.; 73ºF; winds 0 mph; 0% cloud cover	8:00 A.M.; 88ºF; winds 0 mph; 0% cloud cover	<15

ATTACHMENT A
BURROWING OWL-FOCUSED NESTING SEASON SURVEYS
DATES, PERSONNEL, TIMES, AND WEATHER CONDITIONS FOR THE
IMPERIAL SOLAR ENERGY CENTER WEST PROJECT (CONT.)

Date	Route Surveyed	Survey Area (acres)	Survey Type	Surveyors	Beginning Conditions	Ending Conditions	Survey Acres/ Hour
07/01/2010	IVW-1	225	BUOW Survey #4	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Glenna Westbrook	5:00 A.M.; 86ºF; winds 0-4 mph; 3% cloud cover	8:00 A.M.; 96ºF; winds 0-2 mph; 1% cloud cover	<15
07/02/2010	IVW-2	225	BUOW Survey #4	Cheri Bouchér Alex Fromer Peter Dolan Gavin Bieber Glenna Westbrook	5:00 A.M.; 87ºF; winds 7-10 mph; 0% cloud cover	7:30 A.M.; 91ºF; winds 0-1 mph; 0% cloud cover	<15
07/07/2010	IVW-2/ IVW-2b	225	BUOW Survey #4/ BUOW Survey #1	Cheri Bouchér Rob Klotz John Yerger Gavin Bieber Glenna Westbrook	5:00 A.M.; 71ºF; winds 0-1 mph; 0% cloud cover	7:30 A.M.; 86ºF; winds 0-2 mph; 0% cloud cover	<15
07/07/2010	IVW-1/ IVW-1b	270	BUOW Survey #4/ BUOW Survey #1	Cheri Bouchér Rob Klotz John Yerger Gavin Bieber Peter Dolan Glenna Westbrook	5:45 P.M.; 101ºF; winds 1-2 mph; 0% cloud cover	8:45 P.M.; 94ºF; winds 3 mph; 0% cloud cover	<15
07/09/2010	IVN/ IVW-2b/ IVW-1b/	270	BUOW Survey #4/ BUOW Survey #2	Cheri Bouchér Rob Klotz John Yerger Gavin Bieber Peter Dolan Glenna Westbrook	5:00 A.M.; 84ºF; winds 0-2 mph; 90% cloud cover	8:00 A.M.; 91ºF; winds 0-1 mph; 75% cloud cover	<15
07/13/2010	IVW-2b/ IVW-1b	180	BUOW Survey #3	Rob Klotz John Yerger Gavin Bieber Glenna Westbrook	5:00 A.M.; 80ºF; winds 0 mph; 0% cloud cover	8:00 A.M.; 87ºF; winds 4 mph; 0% cloud cover	<15
07/15/2010	IVW-2b/ IVW-1b	180	BUOW Survey #4	Rob Klotz John Yerger Gavin Bieber Glenna Westbrook	5:00 A.M.; 83ºF; winds 0 mph; 10% cloud cover	8:00 A.M.; 88ºF; winds 2 mph; 40% cloud cover	<15

ºF = degrees Fahrenheit; mph = miles per hour; % = percent; BUOW =burrowing owl

ATTACHMENT B

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL SOLAR ENERGY CENTER WEST PROJECT SURVEY AREA

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
INVERTEBRATES (Nomenclature from Eriksen and Belk 1999; Milne and Milne 1980; Mattoni 1990; and Opler and Wright 1999)							
PIERIDAE	**WHITES & SULPHURS**						
Pieris rapae	cabbage white	FA, CBS, DW	C	O	O	O	O
LYCAENIDAE	**BLUES, COPPERS, & HAIRSTREAKS**						
Brephidium exile	western pygmy blue	FA, CBS, DW	C	O	O	O	O
Icaricia acmon acmon	acmon blue	FA	U	O			
NYMPHALIDAE	**BRUSH-FOOTED BUTTERFLIES**						
Vanessa cardui	painted lady	FA, CBS, DW	C	O	O	O	O
FORMICIDAE	**ANTS**						
Pogonomyrmex spp.	harvester ants	FA, CBS	C	O	O	O	O
SCORPIONIDAE	**SCORPIONS**						
Centruroides exilicauda	bark scorpion	CBS	F		O		
THERAPHOSIDAE	**TARANTULAS**						
Aphonopelma chalcodes	*desert tarantula*	FA	U	B		O	O
REPTILES (Nomenclature from Crother 2001 and Crother et al. 2003)							
IGUANIDAE	**IGUANID LIZARDS**						
Dipsosaurus dorsalis dorsalis	northern desert iguana	FA, CBS	C	O	O	O	O

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL VALLEY WEST SOLAR PROJECT SURVEY AREA (CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
PHRYNOSOMATIDAE	**PHRYNOSOMATID LIZARDS**						
Callisaurus draconoides rhodostictus	common zebra-tailed lizard	FA, CBS	C	O	O	O	O
Phrynosoma mcallii	flat-tailed horned lizard	FA, CBS	U	O	O	O	O
Uta stansburiana	common side-blotched lizard	FA, CBS	C	O			
TEIIDAE	**WHIPTAIL LIZARDS**						
Aspidoscelis tigris tigris	Great Basin tiger whiptail	FA, CBS	F	O	O	O	O
COLUBRIDAE	**COLUBRID SNAKES**						
Chionactis occipitalis	western shovel-nosed snake	CBS	U	O	O	O	
CROTALIDAE	**RATTLESNAKES**						
Crotalus cerastes	Sidewinder rattlesnake	CBS, FA	U	O	O	O	
BIRDS (Nomenclature from American Ornithologists' Union 1998 and Unitt 2004)							
ODONTOPHORIDAE	**NEW WORLD QUAIL**						
Callipepla gambelii gambelii	Gambel's quail	FA, CBS, AT, DW, MT, TT	C/ Y	O	O	O	
ARDEIDAE	**HERONS & BITTERNS**						
Bubulcus ibis ibis	cattle egret	OW	F/ Y		O		
Butorides virescens	green heron	OW	U/ S	O			
CATHARTIDAE	**NEW WORLD VULTURES**						
Cathartes aura	turkey vulture	F	F/ M, S	O	O	O	
ACCIPITRIDAE	**HAWKS, KITES, & EAGLES**						
Buteo jamaicensis	red-tailed hawk	CBS	F/ Y			O	O
Circus cyaneus hudsonius	northern harrier	F	U/ Y				

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL VALLEY WEST SOLAR PROJECT SURVEY AREA (CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
FALCONIDAE	**FALCONS & CARACARAS**						
Falco sparverius sparverius	American kestrel	CBS	U/ Y	O	O	O	O
CHARADRIIDAE	**LAPWINGS & PLOVERS**						
Charadrius vociferus vociferus	killdeer	FA	U/ Y	O	O	O	
LARIDAE	**GULLS, TERNS, & SKIMMERS**						
Larus delawarensis	ring-billed gull	F	U		O		
COLUMBIDAE	**PIGEONS & DOVES**						
Columba livia	rock dove (I)	CBS	F/ Y	O	O	O	
Columbina passerina pallescens	common ground dove	FA	F/ Y	O	O		
Scardafella inca	inca dove	CBS	U/ Y			O	
Streptopelia decaocto	Eurasian collared dove	FA, CBS	F/ Y	O	O	O	
Zenaida asiatica mearnsi	white-winged dove	CBS, TT	C/ Y			O	
Zenaida macroura marginella	mourning dove	FA, CBS, AT, DW, MT, TT	C/ Y	O	O	O	O
CUCULIDAE	**CUCKOOS & ROADRUNNERS**						
Geococcyx californianus	greater roadrunner	FA, CBS	U/ Y	O			
STRIGIDAE	**TYPICAL OWLS**						
Athene cunicularia hypugaea	western burrowing owl	FA	U/ Y, W	O			
Bubo virginianus	great horned owl	TT	U/ Y	O			

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL VALLEY WEST SOLAR PROJECT SURVEY AREA (CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
CAPRIMULGIDAE	**GOATSUCKERS**						
Chordeiles acutipennis texensis	lesser nighthawk	CBS	F/ S	O	O	O	O
TROCHILIDAE	**HUMMINGBIRDS**						
Calypte anna	Anna's hummingbird	MT	U/ Y	O			
Calypte costae	Costa's hummingbird	DW	U/ S		O		
TYRANNIDAE	**TYRANT FLYCATCHERS**						
Empidonax traillii	willow flycatcher	MT, TT	U/ S	O			
Myiarchus cinerascens cinerascens	ash-throated flycatcher	MT	/ S	O			
Sayornis nigricans semiatra	black phoebe	FA, DW, AT	F/ Y	O	O	O	
Sayornis saya	Say's phoebe	CBS, DW	F/ W	O	O	O	O
Tyrannus verticalis	western kingbird	DW	F/ S	O	O	O	O
LANIIDAE	**SHRIKES**						
Lanius ludovicianus	loggerhead shrike	DW, TT, MT	F/ S	O	O	O	O
CORVIDAE	**CROWS, JAYS, & MAGPIES**						
Corvus brachyrhynchos hesperis	American crow	FA, TT	U/ Y	O			
Corvus corax clarionensis	common raven	F	F/ Y	O	O	O	O
ALAUDIDAE	**LARKS**						
Eremophila alpestris	horned lark	FA, CBS, TT, DW	C/ Y	O	O	O	O

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL VALLEY WEST SOLAR PROJECT SURVEY AREA (CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
HIRUNDINIDAE	**SWALLOWS**						
Petrochelidon pyrrhonota tachina	cliff swallow	OW, AT, F	F/ S	O		O	
Stelgidopteryx serripennis	northern rough-winged swallow	OW, AT	C/ S	O		O	O
REMIZIDAE	**VERDIN**						
Auriparus flaviceps acaciarum	verdin	FA, DW	C/ Y	O	O	O	
MIMIDAE	**MOCKINGBIRDS & THRASHERS**						
Mimus polyglottos polyglottos	northern mockingbird	MT, TT	F/ Y	O			
Toxostoma crissale	crissal thrasher	MT	U/ Y	O			
Toxostoma lecontei lecontei	LeConte's thrasher	MT	U/ Y	O		O	
STURNIDAE	**STARLINGS & MYNAS**						
Sturnus vulgaris	European starling (I)	F	F/ Y		O	O	
SYLVIIDAE	**GNATCATCHERS**						
Polioptila caerulea	blue-gray gnatcatcher	DW	F/ Y	O	O		
Polioptila melanura	black-tailed gnatcatcher	DW	F/ Y	O		O	
PTILOGONATIDAE	**SILKY FLYCATCHERS**						
Phainopepla nitens lepida	phainopepla	DW	U/ Y			O	
PARULIDAE	**WOOD WARBLERS**						
Dendroica coronata	yellow-rumped warbler	DW, MT	C/ W	O	O	O	
EMBERIZIDAE	**EMBERIZIDS**						
Melospiza melodia	song sparrow	CBS	U/ Y				
Pipilo maculatus	spotted towhee	MT	U/ W	O			
Pipilo aberti	Abert's towhee	CBS, TT	F/Y	O	O	O	O

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL VALLEY WEST SOLAR PROJECT SURVEY AREA (CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
Zonotrichia leucophrys	white-crowned sparrow	FA, CBS, MT, AT	C/ W	O	O	O	
ICTERIDAE	**BLACKBIRDS & NEW WORLD ORIOLES**						
Agelaius phoeniceus	red-winged blackbird	AT, OW	C/ Y	O	O	O	O
Icterus bullockii	Bullock's oriole	TT	U/ Y	O			
Molothrus ater	brown-headed cowbird	MT	/ Y	O		O	O
Quiscalus mexicanus	great-tailed grackle	AT	/ Y	O			
Sturnella neglecta	western meadowlark	RA	/ Y	O	O	O	O
Xanthocephalus xanthocephalus	yellow-headed blackbird	TT, OW	/ W	O		O	
FRINGILLIDAE	**FINCHES**						
Carduelis psaltria hesperophilus	lesser goldfinch	DW, CBS, MT	F/ Y	O	O	O	
Carpodacus mexicanus frontalis	house finch	FA, CBS	C/ Y	O	O	O	
PASSERIDAE	**OLD WORLD SPARROWS**						
Passer domesticus	house sparrow (I)	CBS	U/ Y		O		
MAMMALS (Nomenclature from Baker et al. 2003)							
MOLOSSIDAE	**FREE-TAILED BATS**						
Tadarida brasiliensis	Mexican free-tailed bat	F, OW	F	O	O	O	O
LEPORIDAE	**RABBITS & HARES**						
Lepus californicus deserticola	desert black-tailed jackrabbit	FA, CBS	F	O	O	O	O
Sylvilagus audubonii	desert cottontail	FA, CBS	C	O	O	O	

ATTACHMENT B
WILDLIFE SPECIES OBSERVED/DETECTED WITHIN THE IMPERIAL VALLEY WEST SOLAR PROJECT SURVEY AREA (CONT.)

Scientific Name	Common Name	Occupied Habitat	On-site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence			
				R-1	IVW-1	IVW-2 /IVW-2A	IVW-2B
SCIURIDAE	**SQUIRRELS & CHIPMUNKS**						
Spermophilus tereticaudus	round-tailed ground squirrel	FA, CBS	C	B	O	B,O	O
HETEROMYIDAE	**POCKET MICE & KANGAROO RATS**						
Dipodomys sp.	kangaroo rat	FA, CBS	C	B, S, T	B, S, T	B, S, T	
Dipodomys deserti deserti	desert kangaroo rat	CBS	C		O		
MURIDAE	**OLD WORLD MICE & RATS (I)**						
Peromyscus sp.	mouse	FA, CBS	C	B, S	B, S	B, S	
CANIDAE	**CANIDS**						
Canis latrans	coyote	FA, CBS	U	T	T	O	
Urocyon cinereoargenteus	common gray fox	CBS	F		T	T	T
Vulpes macrotis	kit fox	CBS	U		O	D	T
MUSTELIDAE	**WEASELS, OTTERS, & BADGERS**						
Taxidea taxus	American badger	CBS	U	T			
CERVIDAE	**DEER**						
Odocoileus hemionus	mule deer	CBS	U		S		

(I) = Introduced species

HABITATS
AG = Agriculture
AT = Arrow-weed thicket
CBS = Creosote bush – white burr sage scrub
DW = Desert wash
F = Flying overhead
FA = Fallow Agriculture (Upland Mustard)
MT = Mesquite thicket
OW = Open water (Westside Canal)
TT = Tamarisk thicket

ABUNDANCE (based on Garrett and Dunn 1981)
C = Common to abundant; almost always encountered in suitable habitat, usually in moderate to large numbers
F = Fairly common; usually encountered in suitable habitat, generally not in large numbers
U = Uncommon; occurs in small numbers or only locally

SEASONALITY (birds only)
A = Accidental; species not known to occur under normal conditions; may be an off-course migrant
M = Migrant; uses site for brief periods of time, primarily during spring and fall months

S = Spring/summer resident; probable breeder on-site or in vicinity
T = Transient; uses site regularly but unlikely to breed on-site
V = Rare vagrant
W = Winter visitor; does not breed locally
Y = Year-round resident; probable breeder on-site or in vicinity

EVIDENCE OF OCCURRENCE
B = Burrow
C = Carcass/remains
D = Den site
O = Observed
S = Scat
T = Track
V = Vocalization

Imperial Solar Energy Center West

Appendix I-4

Post Survey Notification of Focused Survey for the Southwestern Willow Flycatcher

Prepared by Recon Environmental, Inc.

July 30, 2010

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RECON

A Company of Specialists

September 28, 2010

Ms. Sandy Marquez
U.S. Fish and Wildlife Service
Carlsbad Field Office
6010 Hidden Valley Road
Carlsbad, CA 92009

Reference: Post-Survey Notification of Focused Survey Results for the Southwestern Willow Flycatcher on the Imperial Solar Energy Center West Project (RECON Number 5726B)

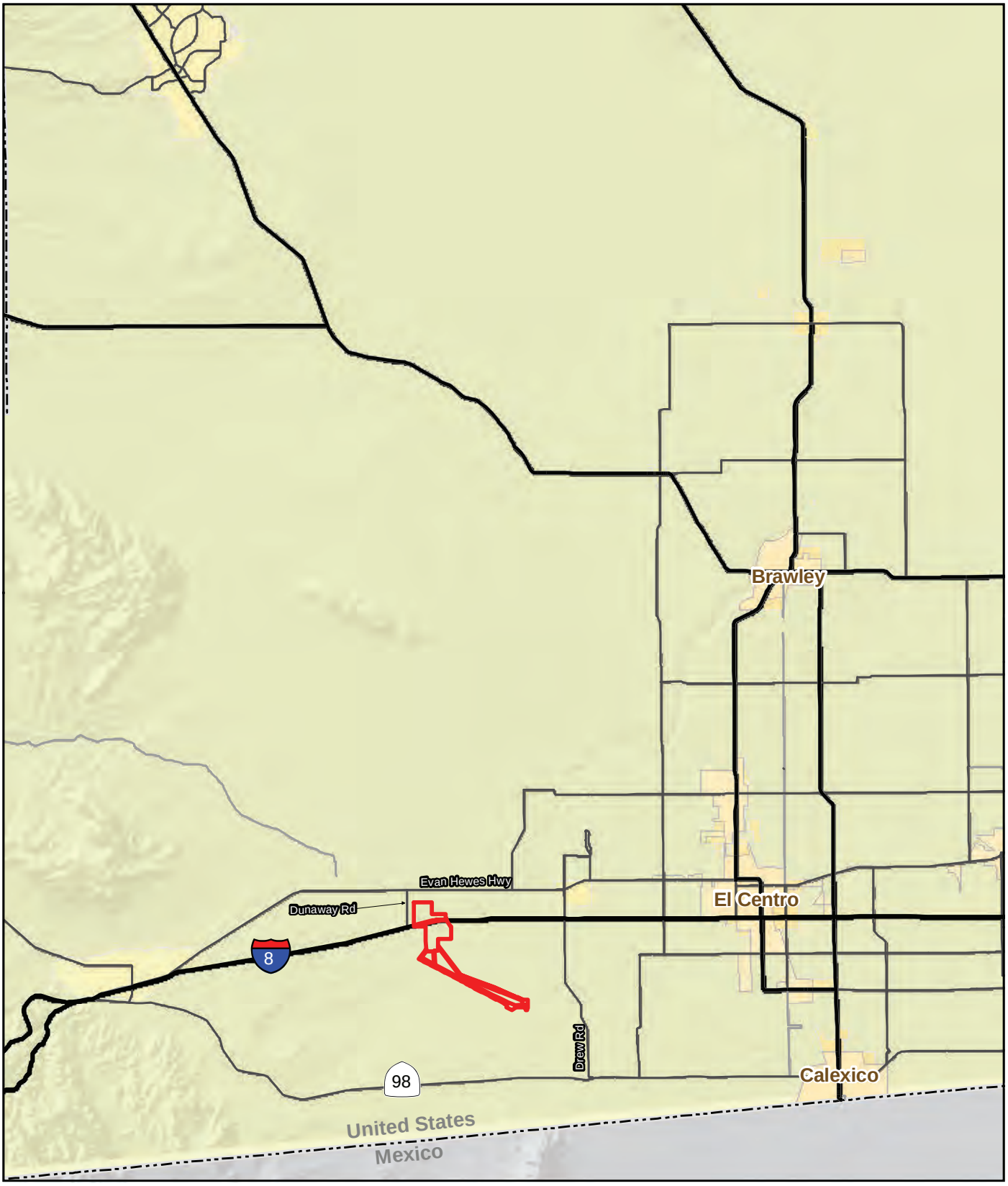
Dear Ms. Marquez:

This letter summarizes the results of the 2010 nesting season surveys for southwestern willow flycatcher (*Empidonax traillii extimus*) conducted within the Imperial Solar Energy Center (ISEC) West Project survey area. The proposed ISEC West Project is located approximately 8 miles west of El Centro in Imperial County, California (Figure 1). The proposed project includes a solar field (R-1) that abuts Interstate 8 to the north and south; a proposed 230-kilovolt (kV) transmission line route (IVW-1) running from the southwest corner of the solar field to the Imperial Valley Substation adjacent to an existing 230-kV transmission line; an alternate 230-kV transmission line route (Alternative A; IVW-2 and IVW-2A) running from the southeast corner of the solar field to the Imperial Valley Substation; and a second alternate 230-kV transmission line route (Alternative B; IVW-2 and IVW-2B) that shares a portion of the Alternative A route, but bypasses a parcel of privately owned land (Figures 2 and 3).

The project area is found in: Township 16 South, Range 11 East, Sections 19, 24, 25, 30, and 31 (U.S. Geological Survey [USGS] 1979); Township 16 South, Range 12 East, Sections 18, 19, 30, 31, 32, 33, and 34 (USGS 1976a); Township 16.5 South, Range 12 E, Sections 3 and 4 (USGS 1976b) of USGS Plaster City, Mount Signal, and Yuha Basin quadrangles (see Figures 2 and 3). The proposed project is found within fallow agricultural fields and undisturbed desert immediately west of the active agricultural complex that surrounds El Centro, California.

Methods

Breeding southwestern willow flycatchers are riparian obligates, typically nesting in relatively dense riparian vegetation where surface water is present or soil moisture is high enough to maintain the appropriate vegetation characteristics (Sogge and Marshall 2000; U.S. Fish and Wildlife Service [USFWS] 2002; Ahlers and Moore 2009). While some of the vegetation communities within the project area include some species associated with riparian areas, none of the areas supports surface water or high soil moisture conditions and is therefore representative of willow flycatcher breeding habitat. Additionally, species occurrence records from the California Natural Diversity Database (CNDDB; State of California 2010) did not indicate the presence of



Project Area

FIGURE 1

Regional Location

RECON

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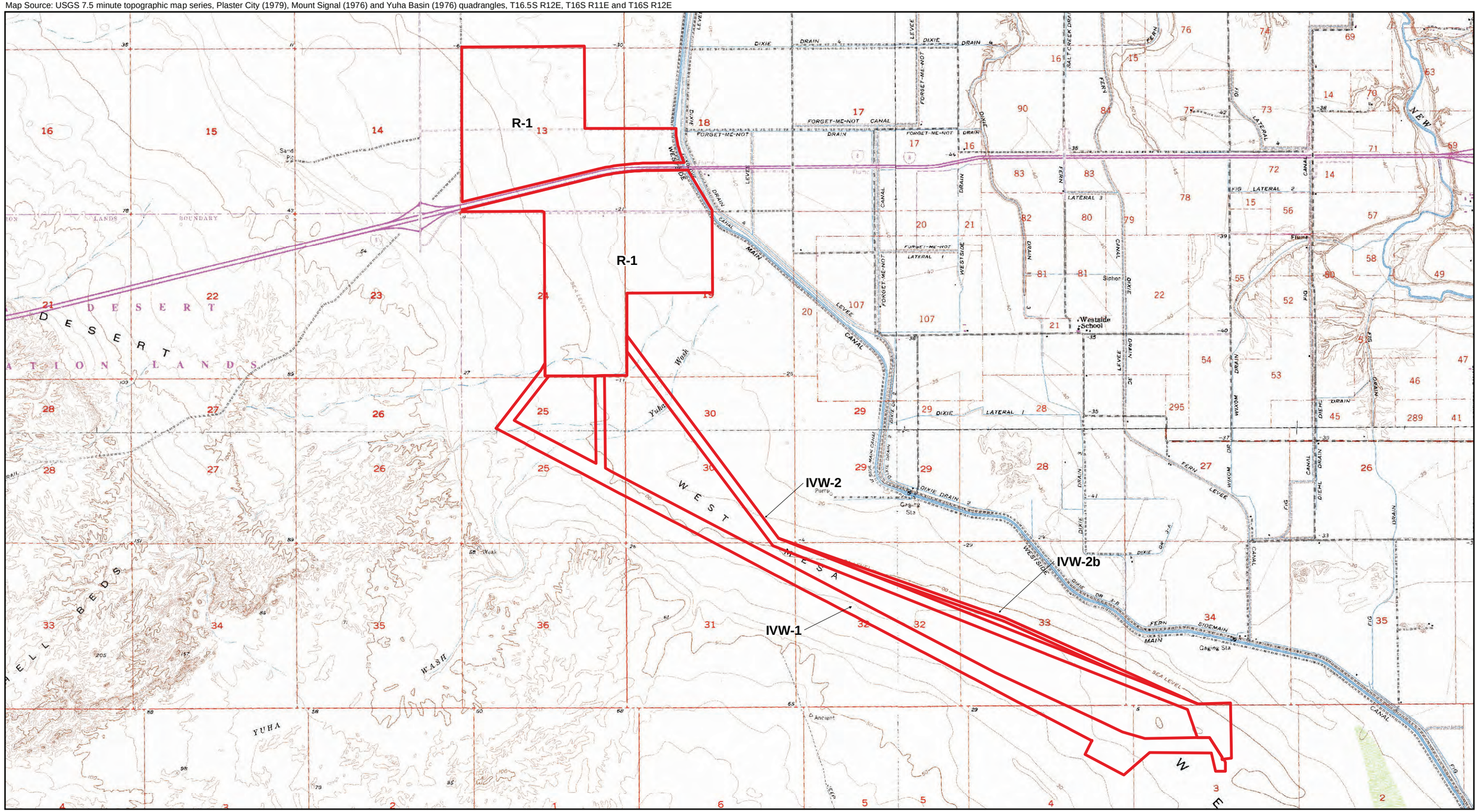
Map Source: USGS 7.5 minute topographic map series, Plaster City (1979), Mount Signal (1976) and Yuha Basin (1976) quadrangles, T16.5S R12E, T16S R11E and T16S R12E



RECON

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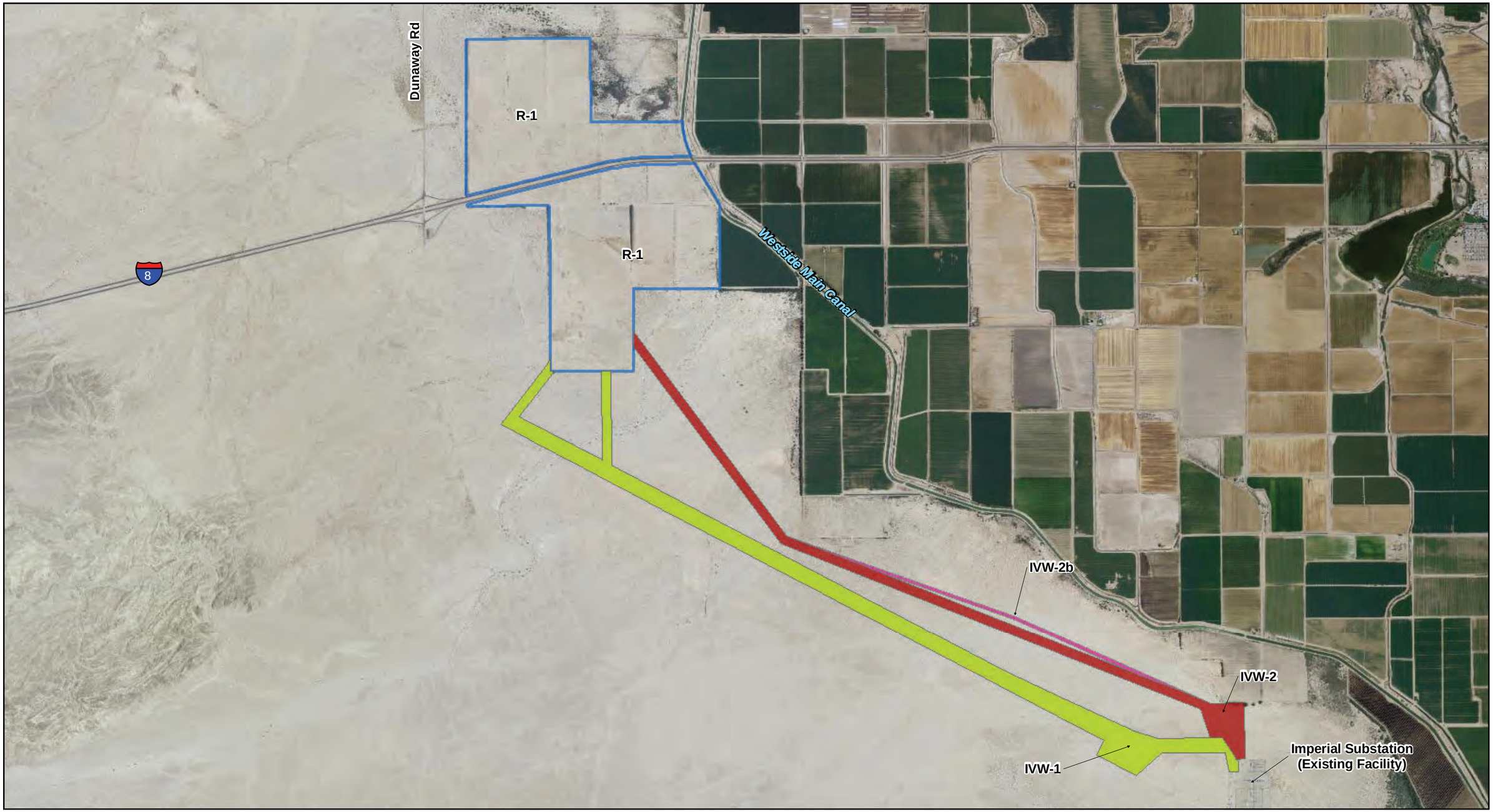
FIGURE 2

Project Location on USGS Map

Image Source: CDFG (flown Summer 2009)



Project Components

- IV West Project Area (R-1)
- Preferred Transmission Line (IVW-1)
- Alternate Transmission Line (IVW-2)
- Private Land Avoidance Transmission Line (IVW-2b)

RECON

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FIGURE 3

Overview of the Imperial Solar Energy Center West Project

willow flycatchers in the project vicinity. Therefore, protocol surveys for southwestern willow flycatchers were not initially conducted.

In early June 2010, willow flycatchers were incidentally detected in sparse mesquite and tamarisk thickets during burrowing owl surveys in the project area. Protocol surveys were then initiated to determine the subspecies and migration status of the willow flycatchers detected on-site. The survey area consisted of the mesquite thicket where the initial detections occurred as well as similar mesquite and tamarisk thickets in proximity to surface water (Westside Main Canal) for a total of approximately 38 acres. Although the May 15–May 31 survey period had passed, the initial detections were counted as the first survey. The four remaining surveys (two during each of the two remaining survey periods) were conducted in accordance with the project clearance survey protocol outlined in Sogge et al. (2010). The surveys were conducted by a qualified biologist (Brian Lohstroh) with a current USFWS endangered species recovery permit No. TE-063608-4. Additionally, RECON biologist Colby Henley (permit number TE-797665) assisted with the focused surveys.

The surveys were conducted using call-playback surveys by broadcasting a series of recorded willow flycatcher *fitz-bews* and *britts* within suitable habitat for 10–15 seconds and then listening for approximately 1 minute for a response. The process was repeated approximately every 20–30 meters. All suitable habitat within the project areas was surveyed from approximately 1 hour before sunset to as late as 09:15 A.M. in suitable weather and environmental conditions. All bird species observed during the surveys were noted. Survey dates, times, and weather conditions are provided in Table 1.

TABLE 1
SURVEY DATES, TIMES, AND WEATHER CONDITIONS

Date	Surveyors	Beginning Conditions	Ending Conditions	Number of Adult WIFL
6/02/10		Detections incidental to burrowing owl surveys.		5
6/13/10	Brian Lohstroh Colby Henley	5:30 A.M.; 66˚F; winds 0 mph; 0% cloud cover	9:15 A.M.; 81˚F; winds 0 mph; 0% cloud cover	1
6/23/10	Brian Lohstroh Colby Henley	5:30 A.M.; 70˚F; winds 0 mph; 0% cloud cover	9:00 A.M.; 88˚F; winds 0 mph; 0% cloud cover	0
7/07/10	Brian Lohstroh Colby Henley	5:30 A.M.; 79˚F; winds 0 mph; 0% cloud cover	9:00 A.M.; 90˚F; winds 0 mph; 0% cloud cover	0
7/13/10	Brian Lohstroh Colby Henley	5:30 A.M.; 82˚F; winds 0 mph; 0% cloud cover	8:30 A.M.; 91˚F; winds 0 mph; 0% cloud cover	0

˚F = degrees Fahrenheit; mph = mile per hour; % = percent; WIFL = willow flycatcher

Existing Conditions

Seven vegetation communities were mapped within the project area including creosote bush–white burr sage scrub, desert wash (smoke tree woodland and big galletta shrub steppe mix), mesquite thicket, tamarisk thicket, open water, fallow agricultural fields (upland mustard), and

active agricultural fields. Vegetation community classifications follow *A Manual of California Vegetation* (Sawyer, Keeler–Wolfe, and Evens 2009). Under *A Manual of California Vegetation,* vegetation communities are classified by the dominant or co-occurring species and are referred to as alliances.

Creosote bush–white burr sage scrub is the dominant vegetation community within the transmission line corridors. This native vegetation alliance is dominated by creosote bush (*Larrea tridentata*) and white burr sage (*Ambrosia dumosa*) with relatively sparse vegetative cover and very flat topography. A layer of desert pavement is present between the shrubs in varying densities throughout the creosote bush–white burr sage vegetation. A number of annual species were observed during the spring general biology surveys that offered a sparse herbaceous layer intermixed with the desert pavement. These species included desert sunflower (*Geraea canescens*), desert sand verbena (*Abronia villosa* var. *villosa*), Peirson's browneyes (*Camissonia claviformis* ssp. *peirsonii*), pebble pincushion (*Chaenactis carophoclinea* var*. carophoclinea*), pincushion flower (*C. stevioides*), desert cambess (*Oligomeris linifolia*), narrow leaved forget-me-not (*Crypthantha angustifolia*), and Mediterranean grass (*Schismus barbata*).

A number of desert washes, including the large Yuha Wash, flow northeast through the transmission corridors from Mount Signal into the Westside Main Canal. These washes are braided with the main flow channels primarily lacking in vegetation, while the sandbars and banks support smoke tree woodland and/or big galletta shrub steppe vegetation alliances. The areas dominated by smoke tree woodland support a number species, including rayless encelia (*Encelia frutescens*), sweetbush (*Bebbia juncea*), individual honey mesquite trees (*Prosopis glandulosa*), and salt cedar trees (*Tamarix aphylla*), scattered saltbush shrubs, a moderate to sparse cover of big galletta grass (*Pleuraphis rigida*), and sparse creosote bush and white burr sage. A few locations that have larger dense patches of galletta grass adjacent to or in the middle of the smoke tree woodland are classified as big galletta shrub steppe.

A small mesquite thicket, dominated by honey mesquite, is present along the eastern edge of the proposed ISEC West solar plant, adjacent to an irrigation ditch. A dense understory of quailbush (*Atriplex lentiformis*) is present along the edges of the thicket and in between the honey mesquite trees. A larger mesquite thicket is present outside of the survey area along the northeast border of the ISEC West solar farm. In this area, dense patches of honey mesquite are interspersed with tamarisk (*Tamarix* spp.) and creosote bush.

Rows of tamarisk trees are present along the edges of the fallow agricultural fields. These trees form dense tamarisk thickets that preclude other plant species from establishing. Various discarded clothing and food articles indicate indicate continual human disturbance.

Arrow weed (*Pluchea sericea*) has established along the edges of the Westside Main Canal in many locations, forming 5-foot-deep arrow weed thickets. These thickets largely exclude other plant species, but weedy invasive species such as sow thistle (*Sonchus* sp.), Sahara mustard (*Brassica tournifortii*), and London rocket (*Sisymbrium irio*) grow along the banks in between the arrow weed thickets.

The Westside Main Canal borders the fallow agricultural fields on the eastern edge of the ISEC-West solar field. This canal is unvegetated, but holding water, and is classified as open water.

Fallow agricultural fields encompass the majority of the proposed ISEC-West solar field. Many of these fields have been fallow for approximately 10 years, while the southwestern parcel appears to have been fallow much longer. While a number of weedy species have established since agricultural practices ceased, mustard species such as Sahara mustard and London rocket provide the dominant vegetative cover in most areas and are classified in the upland mustard

vegetation alliance. Nettle-leaf goosefoot (*Chenopodioum murale*) and Mediterranean grass are also co-dominant species that provide significant vegetative cover, although the density and composition varies throughout the fields. Other common species within the fallow agricultural fields include narrow-leaved forget-me-not, desert cambess, and Peirson's browneyes. In addition, native perennials such as four-wing saltbush and desert holly are beginning to re-establish along the edges of the fields, adjacent to the canal and the Interstate 8.

Survey Results

Willow flycatchers were initially detected on June 2, 2010 during focused breeding season burrowing owl surveys in the project area. The willow flycatchers, located within a linear thicket of mesquite and saltbush (Figure 4), were spontaneously giving "*fitz-bew*" and "*whitt*" calls. In addition to the audible detections, five willow flycatchers were visually observed. On the subsequent survey on June 13, 2010, a single bird gave repeated "*whitt*' calls in response to the broadcast calls of southwestern willow flycatchers. It was not until the call of the northwest race of willow flycathers was broadcast that the individual responded with a "*fitz-bew*" call. No willow flycatcher was detected during the final three surveys (June 23, July 7, and July 13, 2010). Based on the spontaneous calls occurring early in the season, the response to the broadcast of the northwestern race, and negative detections later in the season, we conclude that the willow flycatchers detected within the project area were migrants. No resident or nesting southwestern willow flycatchers was detected. Survey data forms and USGS maps are provided in Appendix A.

Birds commonly observed during the surveys included mourning dove (*Zenaida macroura*), white-winged dove (*Z. asiatica*), red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), greater roadrunner (*Geococcyx californianus*), Abert's towhee (*Pipilo aberti*), and black-tailed gnatcatcher (*Polioptila melanura*). Brown-headed cowbirds (Molothrus ater) were also observed in the survey area.

If you have any questions concerning the contents of this notification letter, please contact me.

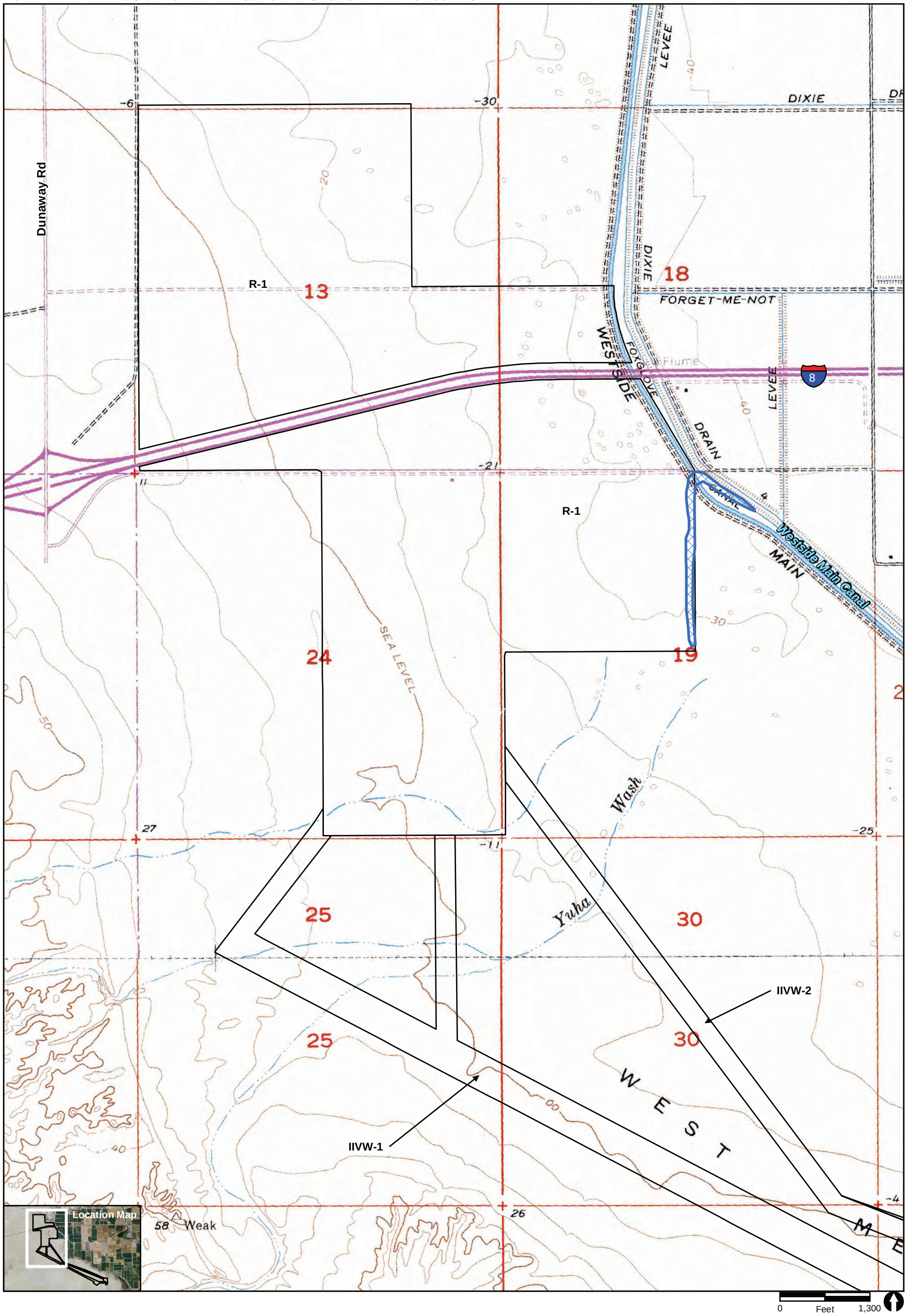
Sincerely,

Colby Henley
Senior Biologist

DCH:eab

cc: Steve Johnson, CSOLAR Development, LLC
Magdalena Rodriguez, California Department of Fish and Game
Jennifer Whyte, Bureau of Land Management
Tim Gnibus, BRG Consulting
Patricia Valenzuela, County of Imperial

Map Source: USGS 7.5 minute topographic map series, Plaster City (1979), Mount Signal (1976) and Yuha Basin (1976) quadrangles, T16.5S R12E, T16S R11E and T16S R12E



Survey Area

Migrant Willow Flycatcher

FIGURE 4

Locations of Migrant Willow Flycatcher

RECON

M:\JOBS3\5726\common_gis\SWFL\West_fig4.mxd 7/26/2010

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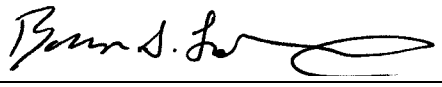
U.S. Fish and Wildlife Service
2002 Southwestern Willow Flycatcher (*Empidonax traillii extimus*) final recovery plan: U.S. Fish and Wildlife Service, Albuquerque, New Mexico.
2005 Designation of critical habitat for the Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Final Rule: Federal Register 70:60886–61009 (October 19, 2005).

United States Geological Survey (USGS)
1976a Mount Signmal quadrangle 7.5-minute topographic map.
1976b Yuha Basin quadrangle 7.5-minute topographic map.
1979 Plaster City quadrangle 7.5-minute topographic map.

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

7/30/10

Colby Henley — Date
Permit Number TE-797665



7/30/10

Brian Lohstroh — Date
Permit Number TE- 063608-4

APPENDIX A

Survey Data Forms

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Imperial Valley Solar Project State CA County Imperial
USGS Quad Name Plaster City, Yuha Basin, Mount Signal Elevation ~8 M below sea level (meters)
Creek, River, Wetland, or Lake Name Westside Main Canal
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** x ***No*** ___

Survey Coordinates: Start: N32.76869 W115.77004 Datum WGS 84 (See instructions)
Stop: N32.66160 W115.66327
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) C. Henley	Date 6/02/10 Start Stop Total hrs ___	5	0	0	N	Incidental observations - numerous 'fitz-bew' and 'whit' calls; five WIFL observed.	5		N32.76893	W115.76975
Survey # 2 Observer(s) B. Lohstroh C. Henley	Date 6/13/10 Start 0530 Stop 0915 Total hrs 3.8	1	0	0	N	One individual gave several 'whit' calls in response to recorded call of SW race. Bird gave several 'fitz-bews' after prompted by call of NW race. Therefore, this bird is likely a migrant of NW race.	1	U	N32.76893	W115.76975
Survey # 3 Observer(s) B. Lohstroh C. Henley	Date 6/23/10 Start 0530 Stop 0900 Total hrs 3.5	0	0	0	N	No WIFL detected.				
Survey # 4 Observer(s) B. Lohstroh C. Henley	Date 7/7/10 Start 0530 Stop 0900 Total hrs 3.5	0	0	0	N	No WIFL detected.				
Survey # 5 Observer(s) B. Lohstroh C. Henley	Date 7/13/10 Start 0530 Stop 0830 Total hrs 3	0	0	0	N	No WIFL detected.				

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	0	0	0	0	

Reporting Individual Brian Lohstroh Date Report Completed ___
US Fish and Wildlife Service Permit # TE-063608-4 State Wildlife Agency Permit # 801197-03

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Brian Lohstroh Phone # (858) 750-9300
Affiliation Lohstroh Biological Consulting, under contract with RECON E-mail lbiological@gmail.com
Site Name Imperial Valley Solar Project Date Report Completed _____
Was this site surveyed in a previous year? Yes___ No x Unknown ___
Did you verify that this site name is consistent with that used in previous years? Yes ___ No ___ Not Applicable x
If site name is different, what name(s) was used in the past?_____
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes x No ___ If no, summarize below.

Management Authority for Survey Area: Federal x Municipal/County ___ State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Land Management

Length of area surveyed: 1.7 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

x Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

___ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Prosopis glandulosa, Prosopis pubescens, Tamarix aphylla

Average height of canopy (Do not include a range): ~3 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

WIFL detected incidentally in June during other biological surveys, WIFL surveys were initiated for this project to confirm these birds were migrants. Incidental detection date represents first survey date for this protocol survey.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary